Garrison Park

Merrill Park

Rollins Park

White Park

City of Concord
Park Improvement Plans

Master Plan

May 2005

Forward

In 2003, the team consisting of Copley Wolff Design Group (CWDG, Landscape Architects and Planners)), URS Corporation (Engineering Consultants), Hartney Greymont, Inc.(Arborist), and Cynthia Zaitzevsky (Landscape Historian) was selected by the City of Concord to prepare Park Improvement Plans for White, Rollins, Garrison, and Merrill Parks. Over the next eight months, CWDG worked with the community and public agencies in developing master plans for these four parks. Prior to presenting to the community, CWDG presented to the City agencies (Planning Department, Recreation Department, and Grounds Division of the General Services) and to the Recreation and Parks Advisory Committee (R&PAC) and comments and suggestions from this meeting were incorporated into the public presentation.

For each individual park, three separate public meetings were held as part of this process: the first on Site Analysis and Assessment, a second on Schematic Master Plans, and a final one on Consensus Master Plan. At the first meeting (Site Analysis and Assessment), the components and conditions of existing elements at each park were presented. The floor was then open to input from the community. The intent of this first meeting was to solicit programming elements desired for each park and to identify concerns and issues the public had with the park as it currently exists.

Two months after the first meeting, CWDG returned to the community to present several schematic master plans. After the plans were presented, the community discussed the advantages and disadvantages of the various components of each design. It was not expected that the community would endorse an entire schematic design, but would select from the various designs what they felt worked best, and in doing so, prioritizing that which was more important when one design element would preclude another element.

Two months after the second meeting, CWDG returned again to present a Consensus Master Plan, which was a synthesis of the preferences expressed for the various components of the schematic master plans from the earlier meetings into a cohesive park. Final comments from the community were obtained, and for the most part, each community endorsed their Consensus Master Plans.

The first four chapters of this report presents each of the four parks. Each chapter will consist of three sections: a description of existing conditions and uses, recommendations as outlined in the Final Consensus Master Plan, and phased implementation of the design with associated costs. None of the parks in this report are in need of immediate intervention. Therefore, the 'phases' can be implemented in any order as funding permits. The site improvements described in a particular phase are dependent on each other. It is recommended that all the improvements within a phase be implemented at one time to reduce the cost associated with the installation and removal of interim solutions until the remainder of a phase's improvements can be installed.

The fifth chapter addresses concerns expressed by the community. This chapter also includes recommendations that generally apply to all of the parks. The first appendix lists sources of some of the recommended site furnishings with model numbers provided to assist in selecting amenities with requested character and quality. The second appendix is the results of research on the Charles Eliot design for White Park. The end of the second appendix includes our evaluation on the Final Consensus Master Plan as it relates to the original design of this park.

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Garrison Park

Park Description

History and Development

Garrison Park was established in the early 20th century on property adjacent to the former Garrison Elementary School. The entire property of Garrison Park is 13.4 acres of which only 3.1 acres are cleared and actively used while the remainder is forested.

Existing Conditions/Uses

Parking

Currently, there is a small off-street parking lot adjacent to the basketball courts, which is able to accommodate about thirteen cars. The condition of the pavement in the parking lot is good. The edges at the entry are cleanly defined with vertical granite curb. The parking stalls have concrete wheel stops. There was no apparent parking lot striping and there was no clearly marked handicap space delineated. There is also limited on-street parallel parking along Hutchins Street. During certain seasons and certain times of the day, the parking supply is greatly reduced by the overflow that occurs from the Second Start Program located at the corner of Hutchins and Knight Streets.

Site Analysis of Garrison Park

Clockwise: Skating area on northwest corner of property, mortared stone and concrete bridge over Rattlesnake Brook, and road edge where parallel parking occurs.

Recreational Facilities and Open Space

Adjacent to the parking lot to the east is a small grassed hill that is used, in the winter, as a sledding hill by small children. There is a clear area to the northeast of the developed part of the parcel that is used for unstructured play and a practice field for soccer and t-ball. It also permits access between the Second Start property and Garrison Park. There is a cleared, level area in the northwest corner of the property that is not being utilized; historically, it had been used as an ice skating area. A large portion of the park is undeveloped woods with Rattlesnake Brook (channeled) dividing the park in half. A portion of the site is used by the City to the Water Treatment Plant. The basketball courts are in good shape. There is no lighting at this site, so it is not uncommon during the summer months to have people aim their automobile lights on the courts in order to play on them after dusk.

Pedestrian/Vehicular Access and Circulation

Access to the park is primarily along Hutchins Street. There are no sidewalks along Hutchins Street from Knight Street to Ralph W. Flanders Drive. When people parallel park adjacent to the park, this becomes as safety hazard as children weave in and out of the cars. There are paths off of Knight and Lake Streets through the undeveloped, wooded area that are not clearly marked except through cleared vegetation and would not be an obvious entry to the park unless you are 'in-the-know'. There is an intact mortared stone and concrete bridge that crosses Rattlesnake Brook between the developed and undeveloped halves of the park near the pool. There was a granite slab stone bridge further east along the Brook that has collapsed and is partially submerged. During the spring thaw, the path that leads to this bridge from Lake Street is the course of flowing runoff, rendering it nearly impassible.

Path impassable during spring thaw (left), and playground (above)

Playground

The playground equipment is limited to a few pieces: a four strap-seat swing set, a stand-alone metal slide, and a very small metal and plastic play structure. This is a sand-covered play area, and is handicap accessible. During the mid- to late-afternoon, there is no respite from the sun.

Vegetation

In addition to the wooded, undeveloped portion of the park, there is a small grove of mature pine trees along Hutchins Street to the east of the basketball courts with little or no understory. There is an allée of pines that partially screens the western edge of the Second Start Parking lot. There is a mixed vegetative (mostly evergreen) border that partially screens the basketball court from the homes across Hutchins Street.

Garrison Park Master Plan Recommendations

Recommendations (Master Plan)

Parking

Additional parking is desirable, but the community felt that an expansion of the existing lot would just be consumed by the overflow from the Second Start lots. The master plan shows additional parking (eyebrow configuration consisting of thirteen additional spaces) on the west side of the basketball court, which would make it less desirable to Second Start, but more desirable to visitors to the park. There is currently a level area that would need to be extended into the wooded area and a retaining wall installed to allow this area to be used. The proposed parking area would also provide better access to the wooded area and the relocated playground.

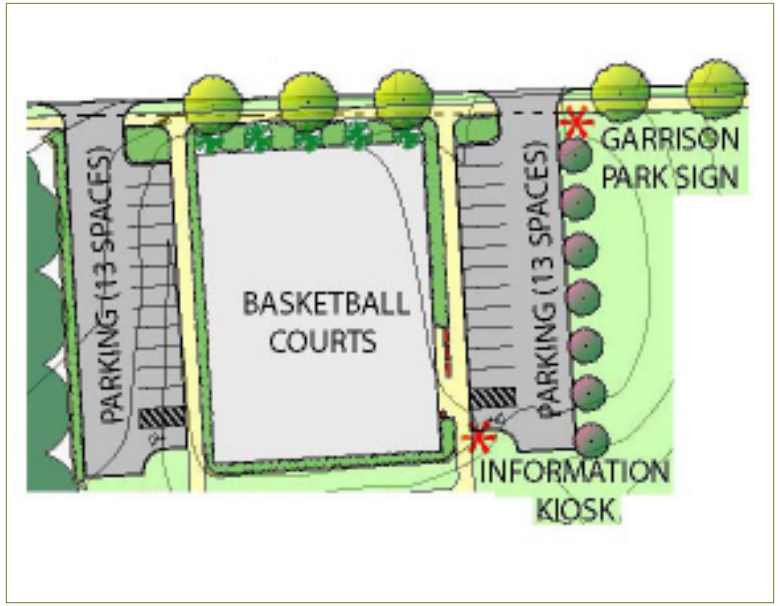
Open Space

T-ball/Soccer:

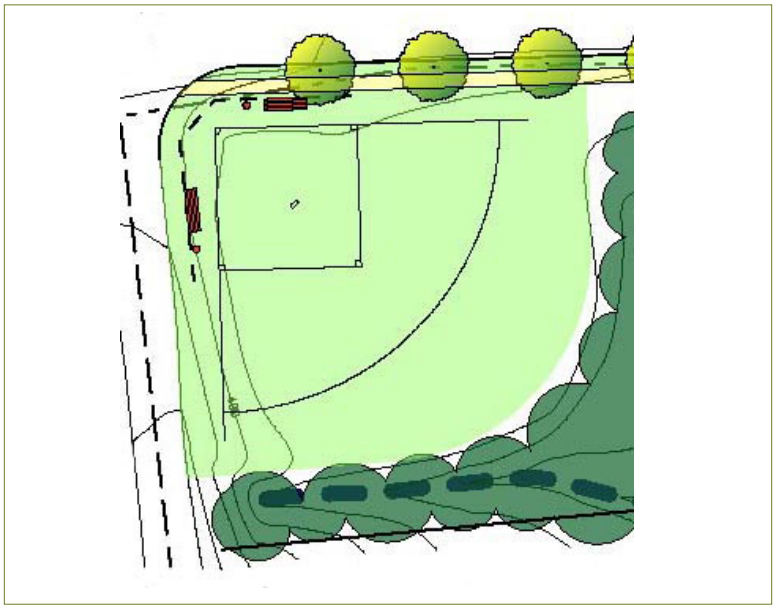
The open space towards the east of the developed portion of the site shall be maintained as grassed open space. The existing mature tree would be removed at some point. It has a decided tilt and by clearing the space of that lone tree, an unobstructed space for soccer and unstructured play area would be provided. Seating should be provided along the perimeter of the woods to relax or enjoy viewing a game/practice.

Ice Skating/T-ball:

The cleared area in the northwest portion of the site, just east of Ralph W. Flanders Drive, was historically used as an ice skating area, and the community would like this function restored. The source of water would be provided through the existing service. Confirmation is needed that this connection is still active, and water valve and meter need to be upgraded to current standards. During the warmer months, this area can be used as a t-ball practice field. Seating, in the form of bleachers, would address the



Parking (above), T-Ball and Soccer (below)



T-Ball and Ice Skating (above), Sledding (below)

seating needs for both uses. To ensure safety during play, a chain link fence around the bleachers and batting area needs to be provided.

Sledding:

Sledding was another winter activity the community wished to accommodate. The sledding hill as shown on the master plan within the undeveloped portion of the site, would not entail removal of any trees, but would require removal of some low vegetation. The chain link fence that separates the Water Treatment Facility from the park would need to be adjusted to reclaim some of the land that is allocated to the facility to provide a sufficient change in elevation to allow for sledding. The fence would be moved uphill so that there was a grade change in elevation of three feet. This will allow sufficient slope for sledding, but not so much that people would go beyond the limits of the intended sledding zone.

Picnicking:

With the northwest portion of the site incorporating multi-seasonal use, the pine tree wooded area off of Hutchins Street between the proposed parking lot and the t-ball field could be developed into a shaded picnic area with tables and trash receptacles. These tables could be accessed from an informal path off of Hutchins Street and an informal path (wood chips or stone dust) established between the new parking lot and the t-ball playfield.

Forest Clearing:

By moving the limits of the chain link fence that define the limits of the Water Treatment Facility, some level open space can be provided as a clearing off a spur in the trail system that can be a quiet 'destination' in the woods.

Pedestrian/Vehicular Access and Circulation

The roadway edge along Hutchins Street between Knight Street and Ralph W. Flanders Drive needs a vertical granite curb. This measure will help make a division between vehicles and pedestrians.

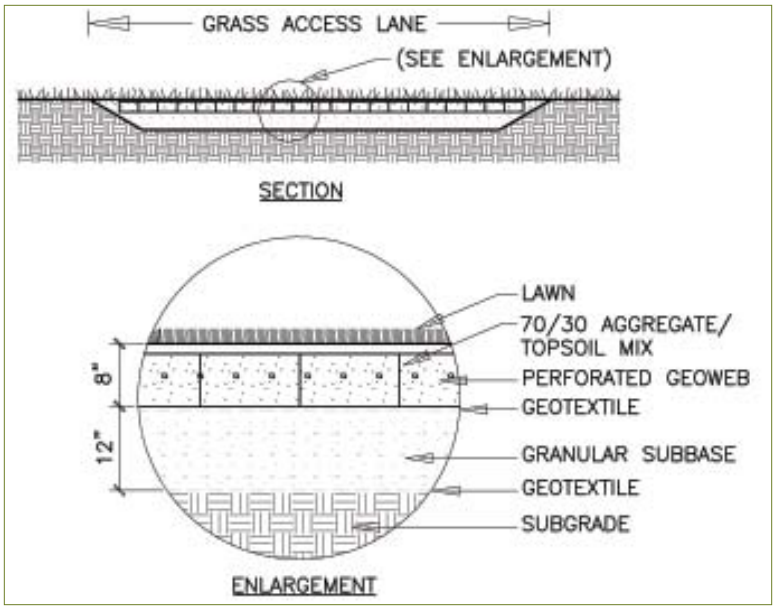
A sidewalk along this edge with a planted buffer can then be installed and will provide safe access from the neighborhood to the park, reducing conflicts between cars and people. The entrance to the Second Start parking lot off of Hutchins Street needs to be similarly defined with a vertical granite curb.

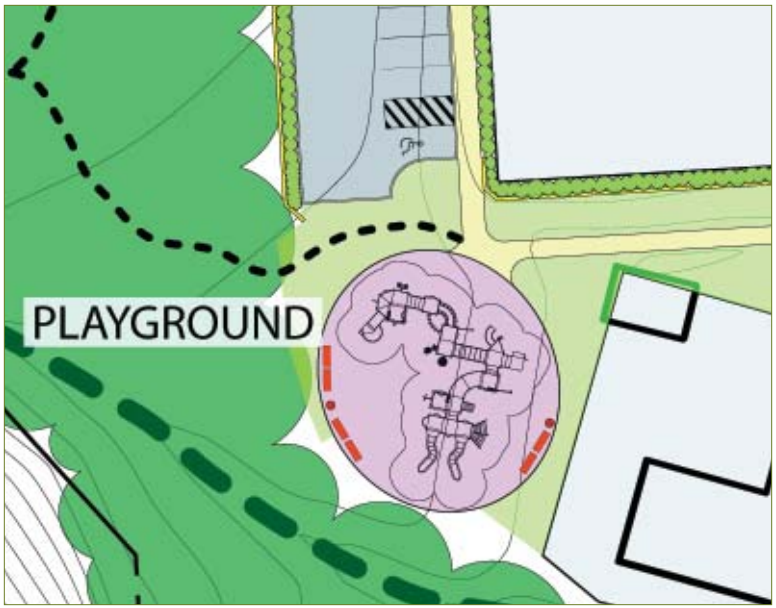
A trail sign showing the configuration of the paths that run through the undeveloped portion of the site should be installed at the corner of Lake and Quaker Streets and at the mortared stone and concrete bridge. The secondary Rattlesnake Brook crossing should be re-established. The paths that are inundated during the spring thaw should transition from mulched path to a slightly raised wood boardwalk. Currently, the swath of exposed ground along this path is wide as people step off of the path to avoid the runoff, and kill the adjacent vegetation on both sides with foot traffic. Establishing the boardwalk would allow the undisturbed forest understory to grow right up to the boardwalk's edge, reducing the amount of sediment that is eroding into the brook.

The Lake Street edge of the park has become an unsightly dumping ground of lawn and yard debris. The City should open up a dialog with the abutters to determine why it is being used that way. Each of the homes along Lake Street face the park and the debris detracts from the beauty of the woods. There was some effort made at installing some ornamental planting along that edge. If it is determined that their actions are thought to be a means of reducing tall weed growth, then the City should consider bringing their grounds maintenance equipment once a month during the growing season to keep this volunteer growth in check. Otherwise, the City should erect signs indicating 'No Dumping' and enforce it by instituting fines. Installing a chain link fence along this edge (or the threat of it) to limit how far the dumping of lawn debris can infiltrate the woods is also a measure that can be used to dissuade this practice.

There is a need to accommodate vehicular access to the maintenance buildings at the pool. The occasional visit and the short stay duration do not warrant providing a permanent paved surface. Vehicular turf has been used

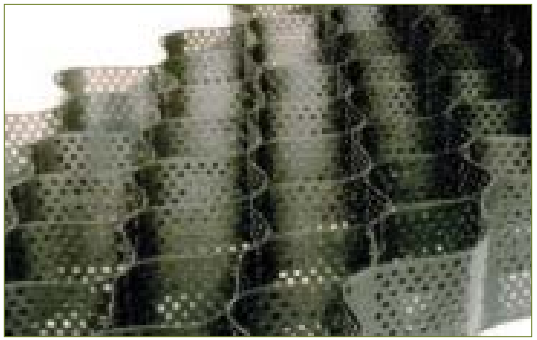
Boardwalks (above)
Vehicular access to maintenance buildings (below)





successfully in situations similar to this. The concept is to provide a heavy, stable, well drained substrate under the turf. The heaviness of the material absorbs the energy associated with stopping and turning the vehicle. A healthy lawn with a knitted root system provides the necessary stability. Good drainage is of key importance to the survival of vehicular turf. The combination of sand and a loose aggregate will reduce soil compaction and diminish the lubricating effects of water that decrease traction on the surface. See the vehicular turf profile on the following page for the recommended installation for vehicular turf.

Recommended installation profile for vehicular turf (top left)
Perforated Geoweb material (below)
Playground (bottom left)



Playground

The playground will be moved to west of the pool. This has the benefit of taking advantage of natural vegetation to provide shade on these structures. The number of components and/or number of structures should be increased to provide a richer experience for the children. The close proximity of the playground to the pool allows parents to monitor their children who might be using both amenities at the same time.

Vegetation

Add street tree planting that separates the roadway from the sidewalk along Hutchins Street. Reinforce the plantings at the top of the slope that screens the basketball courts from the residential housing across Hutchins Street. Provide ornamental tree planting between the pool and the new picnic shelter. Provide low shrub plantings around the perimeter of the basketball court to soften the edge between the court and the new sidewalk. Provide ornamental trees along the edge of the east parking lot to signal a transition from a vehicle zone to a pedestrian zone.

Phasing of Improvements/Costs

Description			*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase I - Central Area							
Site preparation and grading	allowance		1	LS	$10,000.00	=	$10,000
Parking and entrance drives							
	Granite street curbing		775	LF	$40.00	=	$31,000
	Bituminous concrete paving		13,000	SF	$3.00	=	$39,000
	Drainage catchbasins		4	EA	$5,000.00	=	$20,000
	Painting/striping		600	SF	$3.00	=	$1,800
Concrete sidewalks			4,870	SF	$5.00	=	$24,350
Gazebo			1	EA	$35,000.00	=	$35,000
Kiosk	allowance		1	LS	$10,000.00	=	$10,000
Site furnishings							
	Bench		7	EA	$2,000.00	=	$14,000
	Trash receptacle		5	EA	$1,500.00	=	$7,500
Signage	1 main entry		1	LS	$5,000.00	=	$5,000
Picnic shelter facility							
	Picnic shelter, 24' x 50'		1	EA	$25,000.00	=	$25,000
	Grill		3	EA	$2,000.00	=	$6,000
	Picnic table		6	EA	$2,000.00	=	$12,000
Restrooms	(Allowance)		1	LS	$50,000.00	=	$50,000
Add play equipment (allowance)			1	LS	$20,000.00	=	$20,000
Lighting			9	EA	$5,000.00	=	$45,000
Planting							
	Loam 6"		370	CY	$18.00	=	$6,660
	Seed		20,000	SF	$1.00	=	$20,000
	Shrub	5950 SF	1	LS	$45,000.00	=	$45,000
	Evergreen trees		5	EA	$500.00	=	$2,500
	Flowering tree		16	EA	$500.00	=	$8,000
	Canopy tree		5	EA	$1,500.00	=	$7,500
					Subtotal Phase I - Central Area		$445,310
					15% Contingency		$66,797
					Total Phase I - Central Area		**$512,107**
					cost per square foot		$6

Garrison Park, Phase I (above)

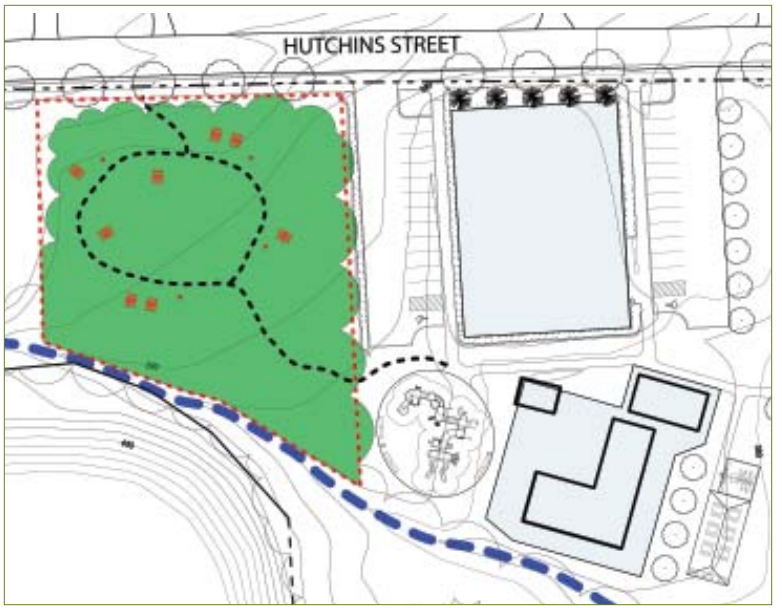
Garrison Park, Phase II (above), Phase III (below)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase II- Open Space Fields					
Site preparation and grading	1	LS	$10,000.00	=	$10,000
Site furnishings					
Bench	4	EA	$2,000.00	=	$8,000
Trash receptacle	3	EA	$1,500.00	=	$4,500
Bleacher	120	LF	$100.00	=	$12,000
Team bench	40	LF	$20.00	=	$800
Chain link backstop	380	LF	$50.00	=	$19,000
Repair water service	1	LS	$10,000	=	$10,000
Loam, 6" deep	900	CY	$18.00	=	$16,200
Seed	48,500	SF	$1.00	=	$48,500
			Subtotal Phase II - Open Space Fields		$129,000
			15% Contingency		$19,350
			Total Phase II - Open Space Fields		**$148,350**
			cost per square foot		$3
Phase III - Hutchins Street Improvements					
Site Preparation and grading	1	LS	$20,000.00	=	$20,000
Concrete Sidewalk, 6' wide	5,140	SF	$5.00	=	$25,700
Granite street curbing	925	LF	$40.00	=	$37,000
Lighting	2	EA	$5,000.00	=	$10,000
Planting					
Loam, 6" deep	241	CY	$18.00	=	$4,338
Seed	13,000	SF	$1.00	=	$13,000
Canopy tree	16	EA	$1,500.00	=	$24,000
			Subtotal Phase III - Hutchins Street Improvements		$134,038
			15% Contingency		$20,106
			Total Phase III - Hutchins Street Improvements		**$154,144**
			cost per square foot		$11

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase IV - Trails					
Site preparation and grading	1	LS	$10,000.00	=	$10,000
Stabilized soil pathway, 6' wide	7,584	SF	$3.00	=	$22,752
Boardwalk, 6' wide	1,600	SF	$50.00	=	$80,000
Bridges 3 @ 15'x10'	450	SF	$100.00	=	$45,000
Chain link fence (new)	540	LF	$50.00	=	$27,000
Site furnishings					
Bench	6	EA	$2,000.00	=	$12,000
Trash receptacle	2	EA	$1,500.00	=	$3,000
Trail Map	2	EA	$3,000.00	=	$6,000
			Subtotal Phase IV - Trails		$205,752
			15% Contingency		$30,863
			Total Phase IV - Trails		**$236,615**
			cost per square foot		$15
Phase V -Picnic Area					
Site preparation	1	LS	$5,000.00	=	$5,000
Stabilized soil pathway, 6' wide	2,690	SF	$3.00	=	$8,070
Site furnishings					
Picnic table	8	EA	$2,000.00	=	$16,000
Trash receptacle	6	EA	$1,500.00	=	$9,000
			Subtotal Phase V - Picnic Area		$38,070
			15% Contingency		$5,711
			Total Phase V - Picnic Area		**$43,781**
			cost per square foot		$6

Summary

Total Phase I - Central Area	$512,106.50
Total Phase II - Open Space Fields	$148,350.00
Total Phase III - Hutchins Street Improvements	$154,143.70
Total Phase IV - Trails	$236,614.80
Total Phase V - Picnic Shelter Area	$43,780.50
GRAND TOTAL	**$1,094,995.50**
cost per square foot	$5



Garrison Park, Phase IV(above), Phase V(below)

Merrill Park

Park Description

History and Development

The land for Merrill Park was acquired by the City in 1938 with additional parcels acquired in 1955, 1957, and 1975, resulting in the current area of 17.2 acres. Only 6.3 acres of the site has been cleared and actively used. This park was named for a former resident and Alderman from East Concord who promoted youth recreational activities.

Existing Conditions/ Uses

Parking

Currently, there is a parking lot of about twenty-nine (29) spaces. Parking lot striping was not apparent and no spaces were designated for handicap parking. The bituminous concrete lot was in fairly good condition, with raised vertical granite curbs defining the edge. In addition, there is on-street parallel parking used during busy times (sports events, church).

Site Analysis of Merrill Park

Playground (above), Duck Pond (below)

Recreational Facilities and Open Space

There are softball and baseball fields that are consistently used for scheduled play. Soccer (two fields) overlaps these uses. When no sports event is scheduled, there is a fair amount of open grassed space that can be used for unstructured play. The basketball courts and the tennis courts are in good shape. Existing lighting fixtures illuminate the tennis courts.

Mill Stream and Duck Pond comprise a significant amount of land on the north side of this park, and its impact on vegetation and adjacent land use extends further. During the winter, the pond is cleared and used for ice skating. There is a reinforced concrete bridge that crosses the stream and is wide enough and durable enough to support small maintenance vehicles. Most people are unaware of this pond during the summer months and there is little on this portion of the site to draw them here.

On site, there is a 24'x40' steel picnic shelter (produced by Litchfield Industries) and a masonry block building (shed) with a pitched roof in good condition. In addition, there is a monument at the corner of the parking lot that is nearly obscured by overgrown shrubs.

Pedestrian/Vehicular Access and Circulation

There is a path system around the Mill Pond that connects to the Society for the Protection of New Hampshire Forests Trail. In certain lengths of this path, the soils are soggy or inundated. There is no paved path that connects the neighborhood to this park, presenting an unsafe condition of children walking along the side of the road.

Playground

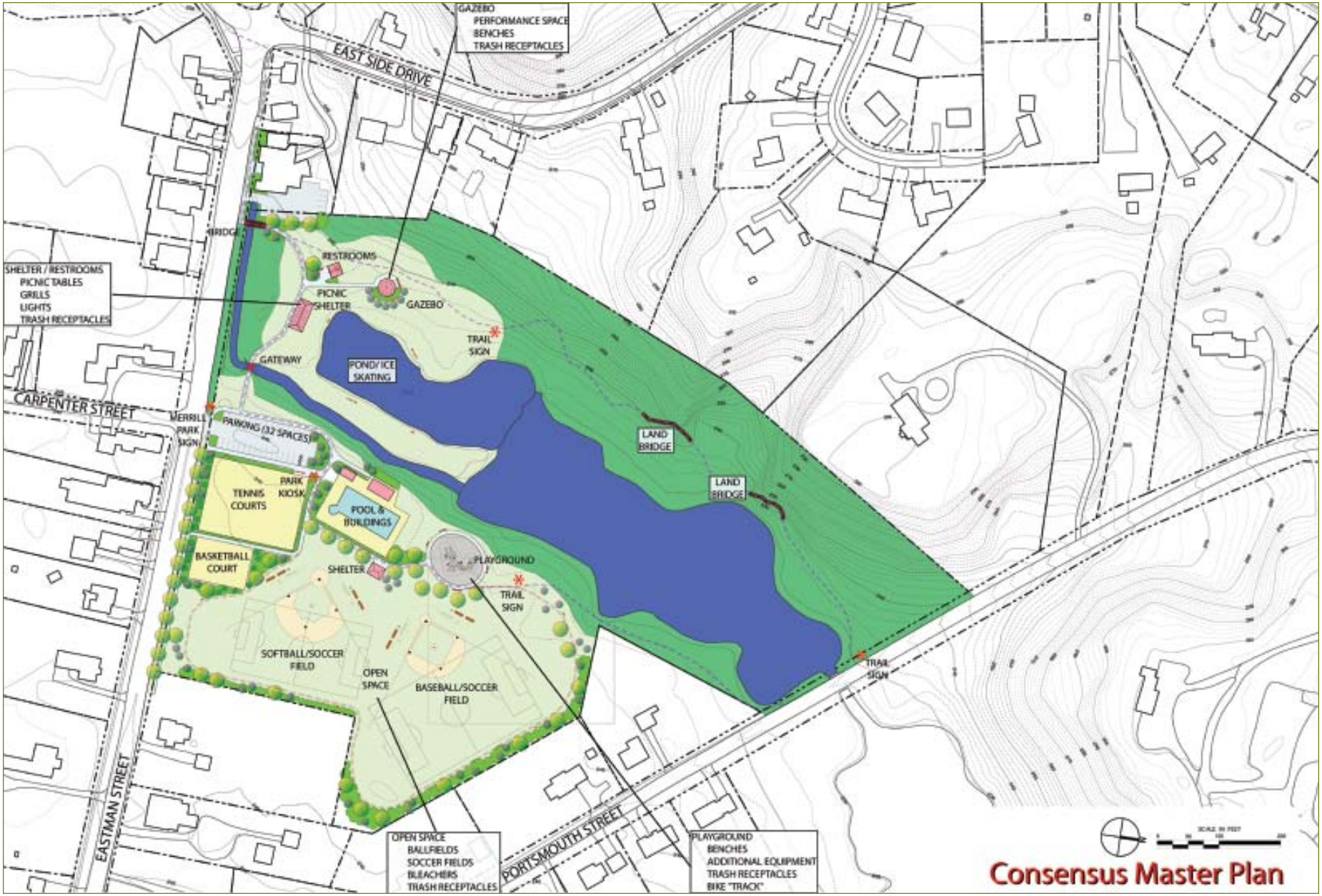
There are three separate components in this park's playground: a swing set with four strap seats, a tire-swing, and a structure consisting of two slides, climbing structures and platforms. This current configuration would not meet today's ADA guidelines since there are four or five elevated components and none are accessible from the ground. The playground sits in a very exposed portion of the site with no reprieve from the afternoon sun.

Vegetation

There are woods around the pond and along the perimeter on the east side. There is also scrub along the brook that partially screens the pond-side of the park. There is an arborvitae hedge around the tennis courts. There are some ornamental plantings around the maintenance entrance to the pool.

Wooded Path (above)

Merrill Park Master Plan Recommendations



Recommendations (Master Plan)

Parking

Parking should be realigned to be parallel to the tennis courts and widened. A complaint is that there is insufficient distance to back up with the existing pull-in parking. Parallel parking along the street will continue.

Recreational Facilities and Open Space

Ice skating:

Ice skating at the Duck Pond will be maintained. Maintenance vehicles will still be able to access the pond side of the park along the existing bridge to plow the surface clear of snow during the winter.

Sports Fields:

Although the ball fields are not aligned properly to reduce conflicts with the sun (east, northeast), the community expressed no desire to change the sports fields or their orientation. Although initially there was some discussion about purchasing a portion of the parcel of property adjacent to the park, this addition is too remote and would not provide enough land to significantly improve existing amenities or add new ones.

Buildings/Structures:

The existing shed should be adaptively reused to provide a year-round restroom facility with a drinking fountain. A picnic shelter with tables and grill should be re-established on the Pond Side of the park. The gazebo should be installed on this portion of the park as well. With these three complementary structures and uses, this side of the park will adopted as an equally contributing portion of the park towards the community's enjoyment.

Pedestrian/Vehicular Access and Circulation

Currently, there are two vehicular accesses to the Park along Eastman Street; one accesses the parking lot and the other accesses the pond area connecting to a small bridge that crosses Mill Brook. The Consensus Master Plan shows the removal of one of these vehicular accesses, maintaining the one to the existing parking lot and providing vehicular access to the pond across the

Merrill Park East (above), Merrill Park West (below)

Merrill Park Pedestrian Bridge (top), Merrill Vegetated Edge (bottom)

existing bridge from the parking lot. A gateway element should be added at this bridge that is visible from the pool- and pond-side of the park to reinforce the connection between these two areas.

By adding a vertical granite curb along the roadway edges of Eastman Street west of the parking lot entrance, a division between vehicles and pedestrians will be created. A sidewalk along this edge with a planted buffer can then be installed and will provide safe access from the neighborhood to the park, reducing conflicts between cars and people. To the east of the existing park entrance, pedestrians will be taken off the road by crossing a new bridge which will connect back to a proposed new city sidewalk. Additional paved paths will be installed to connect and provide handicap access to new and existing amenties, including the picnic shelter and the playground area. An informal perimeter path (stone dust) around the ball fields will be installed that will connect to the paved paths around the playground equipment and the pond area.

A further study is recommended to identify ways to provide pedestrian sidewalks along the north and south sides of Eastman Street. This may involve the purchase of land behind the residences on the north side of Eastman Street to provide area to park the cars behind the buildings. In addition, there is significant conflict between the head-in parking accessing the convenience store and pedestrian access along Eastman Street.

To improve the existing path system around Duck Pond that connects to the Society for the Protection of New Hampshire Forests Trail, two courses of action should be taken. Portions of the path on the east side of the Pond should be moved to higher elevation. In the instances where this would require installation of the path along a steep slope, a level boardwalk should be installed. This would diminish the impact to existing vegetation and reduce the chance of erosion along this slope. The path along the west side of the Pond should be can be improved by moving segments of this path to a higher

elevation where necessary. A sign system should be provided to show how this path system connects to adjacent the one.

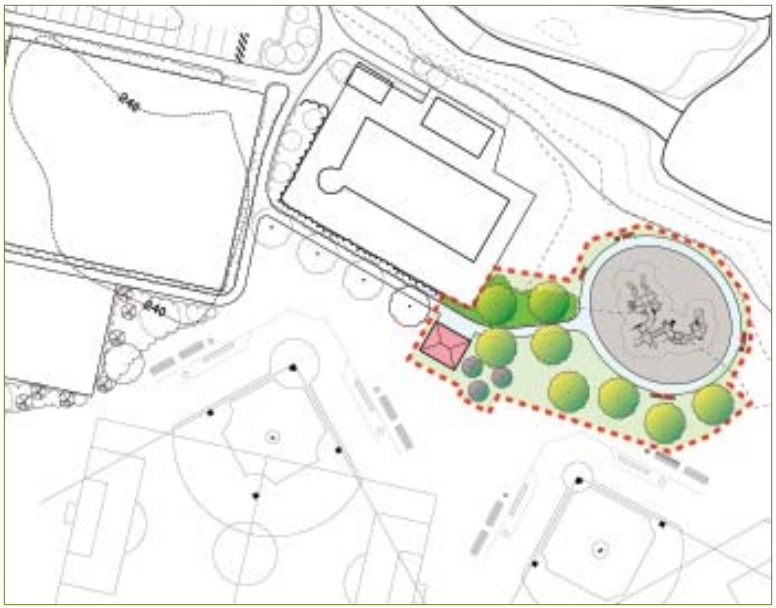
Playground

The number of components and/or number of structures should be increased to provide a richer experience for the children. The location of the playground should be maintained since it is in close proximity to the pool, allowing parents to monitor their children who might be using both amenities at the same time.

Vegetation

Shade tree planting is proposed along path from the parking lot to playground, around the playground area. This should provide some relief from late afternoon sun. Ornamental planting should be installed around the proposed gazebo and restroom. Efforts should be taken to strengthen the definition to the limits of park property with a low vegetatative barrier.

Phasing of Improvements/Costs



Merrill Park, Phase I (above), Phase II (below)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase I - Tot Lot Area					
Topsoil stripping, screening and stockpiling	259	CY	$5	=	$1,295
Gravel backfilling and grading	300	CY	$20	=	$6,000
Precast concrete curbing, vertical	280	LF	$15	=	$4,200
Underdrainage	300	LF	$25	=	$7,500
Leaching basin	1	EA	$7,500	=	$7,500
Bituminous concrete paving @ pathway	2,540	SF	$3	=	$7,620
Chain link fence and gate	280	LF	$20	=	$5,600
Fibar surfacing	6,400	SF	$2	=	$12,800
Play equipment	1	EA	$75,000	=	$75,000
Picnic shelter facility	1	EA	$40,000	=	$40,000
Picnic shelter, 24' x 50'	1	EA	$25,000.00	=	$25,000
Grill	3	EA	$2,000.00	=	$6,000
Picnic table	6	EA	$2,000	=	$12,000
Bench	5	EA	$2,000	=	$10,000
Trash receptacle	5	EA	$1,500	=	$7,500
Shrub	1,500	SF	$10	=	$15,000
Flowering tree	3	EA	$500	=	$1,500
Canopy tree	8	EA	$1,500	=	$12,000
Loam and seed	1,322	SY	$10	=	$13,220
			Subtotal Phase I - Tot Lot Area		$269,735
			15% Contingency		$40,460
			Total Phase I - Tot Lot Area		**$310,195**
			cost per square foot		$14
Phase II - Pool Area					
Bituminous concrete walkway	1,850	SF	$4	=	$7,400
Shrub	3,100	SF	$10	=	$31,000
Canopy tree	4	EA	$1,500	=	$6,000
Flowering tree	6	EA	$500	=	$3,000
Loam and seed	111	SY	$10	=	$1,110
			Subtotal Phase II - Pool Area		$48,510
			15% Contingency		$7,277
			Total Phase II - Pool Area		**$55,787**
			cost per square foot		$9

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase III - Mill Brook Area					
Topsoil stripping, screening and stockpiling	150	CY	$5	=	$750
Gravel backfilling and grading	175	CY	$20	=	$3,500
Bituminous concrete walkway	4,000	SF	$4	=	$16,000
Picnic shelter, 25' x 50'	1	EA	$50,000	=	$50,000
Gazebo	1	EA	$50,000	=	$50,000
Restroom shelter, 25' x 50'	1	EA	$50,000	=	$50,000
Bench	9	EA	$2,000	=	$18,000
Picnic table	6	EA	$2,000	=	$12,000
Trash receptacle	5	EA	$1,500	=	$7,500
Wood "creek" bridge	30	LF	$200	=	$6,000
Shrub	3,600	SF	$10	=	$36,000
Canopy tree	4	EA	$1,500	=	$6,000
Flowering tree	10	EA	$500	=	$5,000
Loam and seed	444	SY	$10	=	$4,440
			Subtotal Phase III - Mill Brook Area		$265,190
			15% Contingency		$39,779
			Total Phase III - Mill Brook Area		**$304,969**
			cost per square foot		$26

Phase IV - Courts Area					
Topsoil stripping, screening and stockpiling	50	CY	$5	=	$250
Gravel backfilling and grading	75	CY	$20	=	$1,500
Bituminous concrete paving @ pathway	1,320	SF	$3	=	$3,960
Park informational kiosk	1	EA	$15,000	=	$15,000
Bench	2	EA	$2,000	=	$4,000
Trash receptacle	1	EA	$1,500	=	$1,500
Shrub	7,580	SF	$10	=	$75,800
Flowering tree	7	EA	$500	=	$3,500
Canopy tree	3	EA	$1,500	=	$4,500
Evergreen tree	19	EA	$500	=	$9,500
			Subtotal Phase IV - Courts Area		$119,510
			15% Contingency		$17,927
			Total Phase IV - Courts Area		**$137,437**
			cost per square foot		$15

Merrill Park, Phase III (above), Phase IV (below)

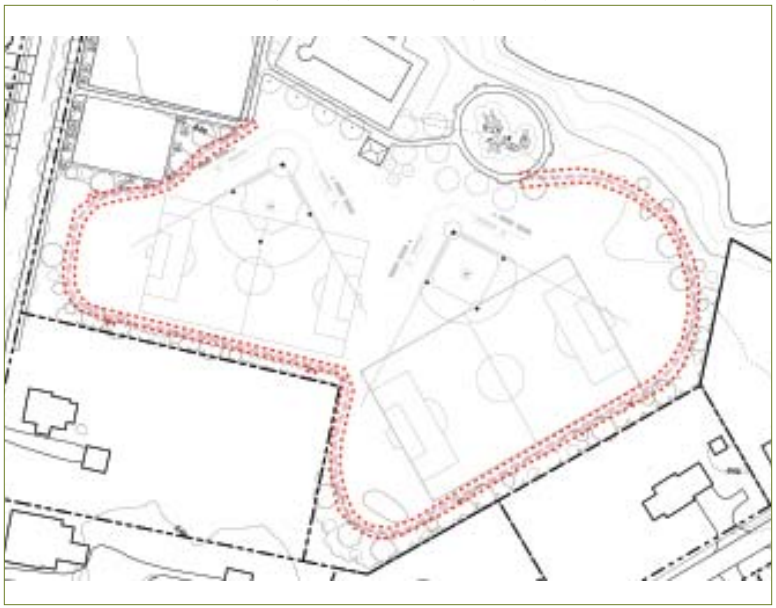
Merrill Park, Phase V (above), Phase VI (below)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase V - Parking Lot					
Granite street curbing, vertical	470	LF	$40	=	$18,800
Bituminous concrete paving top coat	10,800	SF	$1	=	$10,800
Bituminous concrete paving @ pathway	2,460	SF	$3	=	$7,380
Bituminous concrete patch	2,350	SF	$3	=	$7,050
Striping	640	LF	$5	=	$3,200
Loam and seed	273	SY	$10	=	$2,730
			Subtotal Phase V - Parking Lot		$49,960
			15% Contingency		$7,494
			Total Phase V - Parking Lot		**$57,454**
			cost per parking space		$1,795
			cost per square foot		$4
Phase VI - Eastman Street Improvements					
Granite street curbing, vertical	800	LF	$40	=	$32,000
Bituminous concrete patch	4,000	SF	$3	=	$12,000
Bituminous concrete paving	2,280	SF	$3	=	$6,840
Park entry sign	1	EA	$5,000	=	$5,000
Canopy tree	13	EA	$1,500	=	$19,500
Loam and seed	4,000	SY	$10	=	$40,000
			Subtotal Phase VI - Eastman Street Improvements		$115,340
			15% Contingency		$17,301
			Total Phase VI - Eastman Street Improvements		**$132,641**
			cost per square foot		$13

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase VII - Fields Area					
Bleacher	120	LF	$100	=	$12,000
Team bench	80	LF	$20	=	$1,600
Chain link backstop	380	LF	$50	=	$19,000
Trash receptacle	4	EA	$1,500	=	$6,000
Canopy tree	2	EA	$1,500	=	$3,000
			Subtotal Phase VII - Fields Area		$41,600
			15% Contingency		$6,240
			Total Phase VII - Fields Area		**$47,840**
Phase VIII - Mill Brook Trail					
Topsoil stripping, screening and stockpiling	355	CY	$5	=	$1,775
Gravel backfilling and grading	400	CY	$20	=	$8,000
Stone dust paving	9,600	SF	$1	=	$9,600
Trail sign	3	EA	$2,500	=	$7,500
Wood "land" bridge	205	LF	$150	=	$30,750
Loam and seed	1,066	SY	$10	=	$10,660
			Subtotal Phase VIII - Mill Brook Trail		$19,375
			15% Contingency		$2,906
			Total Phase VIII - Mill Brook Trail		**$22,281**
			cost per square foot		$1

Merrill Park, Phase VII (above), Phase VIII (below)

Merrill Park, Phase IX(above), Phase X (below)



Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase IX - South Edge Buffer					
Understory planting	10,800	SF	$5	=	$54,000
Flowering tree	19	EA	$500	=	$9,500
Canopy tree	11	EA	$1,500	=	$16,500
			Subtotal Phase IX - South Edge Buffer		$80,000
			15% Contingency		$12,000
			Total Phase IX - South Edge Buffer		**$92,000**
			cost per square foot		$9
Phase X - Southern Trail					
Topsoil stripping, screening and stockpiling	302	CY	$5	=	$1,510
Gravel backfilling and grading	350	CY	$20	=	$7,000
Stone dust paving	8,160	SF	$1	=	$8,160
Bench	5	EA	$2,000	=	$10,000
Loam and seed	906	SY	$10	=	$9,060
			Subtotal Phase X - Southern Trail		$35,730
			15% Contingency		$5,360
			Total Phase X - Southern Trail		**$41,090**
			cost per square foot		$2

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase XI - Eastman Street Improvements @ Village					
Granite street curbing, vertical	320	LF	$40	=	$12,800
Bituminous concrete patch	1,600	SF	$3	=	$4,800
Concrete sidewalk, 6' wide	1,920	SF	$6	=	$11,520
Loam and seed	177	SY	$10	=	$1,770
Subtotal Phase XI - Eastman Street Improvements @ Village					$30,890
15% Contingency					$4,634
Total Phase XI - Eastman Street Improvements @ Village					**$35,524**
cost per square foot					$7

Summary

Total Phase I - Tot Lot Area	$310,195
Total Phase II - Pool Area	$55,787
Total Phase III - Mill Brook Area	$304,969
Total Phase IV - Courts Area	$137,437
Total Phase V - Parking Lot	$57,454
Total Phase VI - Eastman Street Improvements	$132,641
Total Phase VII - Fields Area	$47,840
Total Phase VIII - Mill Brook Trail	$22,281
Total Phase IX - South Edge Buffer	$92,000
Total Phase X - Southern Trail	$41,090
Total Phase XI - Eastman Street Improvements @ Village	$35,524
GRAND TOTAL	**$1,237,216**
cost per square foot	$10

Merrill Park, Phase XI (above)

Rollins Park

Park Description

In 1891, Frank W. Rollins released property to the City of Concord to be used as a public park, in memory of Hon. Edward H. Rollins. In 1895, the City hired James H. Bowditch of Boston to examine the grounds and make recommendations. It was then decided that this public park was to be made accessible by means of drives and paths, but that ornamental planting and ornamentation were not recommended, and that it should remain a place to study "the beauties of a woodland park of natural growth." In 1896, actual site improvements began, including the installation of an artistic bridge, the planting of trees, shrubs and ferns, and the building of the stone wall along Broadway. In 1897, water was introduced (a drinking fountain, the artificial pond) and a rustic shelter erected in center of the park. Additional land was purchased in 1899 to be annexed to this park (across Bow Street in the northwest corner), but due to insufficient funding, no improvements were made to that parcel of land. Today,

Site Analysis of Rollins Park

that parcel is infrequently referred to as Deer Park and is not considered part of Rollins Park. Rollins Park, in its current configuration, consists of 22.4 acres of land.

Existing Conditions/ Uses

Parking

Currently, there is on-street parking along Broadway to accommodate approximately 40-50 parallel-parked cars. There is a service road off of Bow Street that provides access to the parking lot at the southern edge of the park. Although there is no formal striping of this lot, area-wise, this lot can accommodate approximately 50-60 cars. There is no clearly delineated handicap parking provided.

Recreational Facilities and Open Space

When both the softball and baseball fields are in use, outfield-use conflicts exist, creating a hazard to the players. Also, the alignment of the fields is not ideal, by official game standards; the line between the pitcher's mound and home plate should run east-northeast. In addition, there is a drainage issue at minor low point on the baseball field. The tennis/basketball courts are in satisfactory condition. Lighting is sufficient to illuminate the courts after dusk.

The man-made pond has evolved from its original design where the ground sloped gently to the water's edge, to its current configuration with mortared, smooth split-face granite retaining walls, the tops of which are at grade. From the top of the wall to the bottom of the 'pond,' there is a vertical drop between two (2) and four (4) feet. The bottom of this area is generally dry, where volunteer shrubs and grasses grow. There is a structurally sound concrete and stone bridge that crosses over the pond, giving pedestrian access between the north and south sides of the pond. There is no woody plant material immediately adjacent to the wall; the lawn goes right up to the edge of the wall.

The larger shed near the pool is currently used for the storage of maintenance

Rollins Park, Man made pond today (top), Man Made Pond, circa early 1900's, Courtesy of Concord Public Library (bottom)

equipment. According to the report by Nobis Engineering, the building is structurally sound, but in need of cosmetic repair. The electric service shed near the basketball courts is in satisfactory condition.

Pedestrian/Vehicular Access and Circulation

There are three current pedestrian accesses to the site along Broadway: mid-park, and the north and south corners. Broadway is a wide lane road with clear sight lines that allows vehicles to drive at fast speeds, creating a pedestrian crossing hazard between the neighborhood and the park.

Previous attempts to install neck downs to facilitate pedestrian crossing by reducing cross times, have not been approved. Pedestrian access along Bow Street is at the northwest corner of the site. Pedestrian access at south end of Bow Street is not separated from the vehicular access. There is a paved walk along Bow Street but there are no barriers separating pedestrians from vehicles. The interior paths are paved in bituminous concrete and are in various degrees of disrepair.

There are two primary paths of circulation. The first goes between Broadway and the pool and playground area. The access for maintenance equipment to Rollins Park is through this entrance; all other vehicles are barred from access at this point by a post and chain gate. The second path goes from the parking lot on the south side of the park to the pool. There is a spur that heads towards the man-made pond. There is unpaved access, and hence a worn desire line, from the northwest corner of the park on Bow Street to the pool. There are two additional entrances to the park along Broadway on the northeast and southeast corners, but there is no evidence of compacted soils and worn lawn in this area, the implication being that these two entrances are infrequently used. The walk adjacent to the park along Broadway has recently been paved, joining a paved sidewalk system north and south of the park.

Playground

New metal and plastic play structures were installed in 2004. The play surface is wood fiber surface. This play surface is retained with plastic edging. This edging is insufficient to the task as evidenced by the wood fiber being scattered beyond the intended limits of the play area, creating a maintenance issue.

Vegetation

According to the arborist, many of the mature Beech trees on the site suffer from a variety of ailments. Two opportunistic disease infections (nectria canker and phytophthora) have taken hold. These are usually indicators of stress that are caused by several environmental conditions, such as drought, poor soils, and soil compaction. The typical treatment of these diseases is by improving the conditions under which these trees exist (see recommendations).

Rollins Park Master Plan Recommendations

Recommendations (Master Plan)

Parking

There are significant changes proposed to the parking configuration at this site. The Consensus Master Plan shows a parking lot is to be constructed closer to Bow Street. The number of spaces in this lot will be increased and two handicap spaces will be provided that abut a pedestrian path. This lot will be one-way angled parking to reduce the area of paved surface, while accommodating over sixty (60) parking spaces. This configuration also provides a planted buffer between the rows and a buffer between the parking lot and the residences across Bow Street.

There will be a connection to the path system servicing the remainder of the site. A smaller lot will be added on the north side of the park off of Bow Street associated with the establishment of the new maintenance shed. The driveway will be shared with maintenance vehicles only.

Recreational Facilities and Open Space

Sports Fields:
With the relocation of the parking lot, additional open space is provided adjacent to the ball fields. The proposed design shows a realignment of the fields in the east-northeast direction. In addition, the distance between the two fields will be increased, reducing the conflicts that currently exist between the outfields.

Picnic Area:
The canopy of the Pine Woods area along the western edge of the property is too dense to allow sunlight to reach the ground. It would improve the conditions of the Pine Woods if some selective thinning took place. In association with this, these areas would be suitable for location of picnic tables and trash receptacles.

Former Man-made Pond:
The former cut-granite masonry lined pond at Rollins Park is an underutilized resource that should be a focal point of a revitalized park. As it exists, the pond is a vegetated depression with a few tree saplings. Water depths were measured in inches, whereas the wall height is about three feet. The pool bottom consists of organic sediments over a

Parking(above), Ballfields (below)

Man-made Pond (below)

medium to coarse sand layer. Groundwater elevations likely vary throughout the year. During the wet seasons, groundwater elevations are likely to rise slightly above the bottom of the pond. During the dry season, groundwater elevations would be somewhat lower.

To become a viable pond, the pool would have to be sustained with a permanent water source. Two potential options include a feed from nearby municipal water lines and a groundwater well. It may well be that groundwater is the better option. Though it will be more costly to install a well, pump and piping system, a groundwater system will avoid taxing the municipal water supply.

Subsurface investigations, including borings and pumping tests will be required to fully evaluate the feasibility of this solution.

As it exists, the pond would not be able to sustain a pool, regardless of the water source. Pool water would be expected to drain, albeit slowly, through the underlying earth materials and though joints in the masonry wall which have deteriorated. However, the pool bottom could be lined with either an impermeable membrane or with an impervious soil containing clay or fine silt. Joints in the masonry would have to be repointed as well.

Drainage from the pool in the event of storm water inflows would be accomplished by means of a weir and drain into the municipal drainage system. There exists drainage infrastructure within Rollins Park that might be used to provide for discharge and disposal of overflow. The capacity and ultimate discharge location of this system will require further investigation.

Aeration of the pool will be a necessity to avoid stagnation and eutrophication. Aeration can be accomplished by the use of a fountain or other systems that will introduce air through turbulence to the water, bringing bad gases to the surface and replenishing dissolved oxygen within the water body.

Maintenance Building:
Rather than investing a significant amount of money into the restoration of the Maintenance Shed, the Consensus Master Plans shows the removal of the old maintenance shed from its current site. A new maintenance shed with attractive architecture in keeping with neighborhood is proposed to be located much closer to Bow Street. Maintenance vehicle access and loading area would be accommodated in the back of the new building.

Pedestrian/Vehicular Access and Circulation

By moving the maintenance building from the pool area to a new structure off of Bow Street, vehicular access from the Broadway entrance can be removed. Nearly all of the bituminous paths inside the park need to be resurfaced. Some consideration should be taken in installing an edge treatment between the

path and the lawn area to reduce the crumbling of the pavement along the edges. This is of greater importance where paths are also accommodate vehicular traffic.

A small network of informal paths (stone dust), including a loop path, is to be installed, connecting the less used north and south entrances along Broadway to interior amenities.

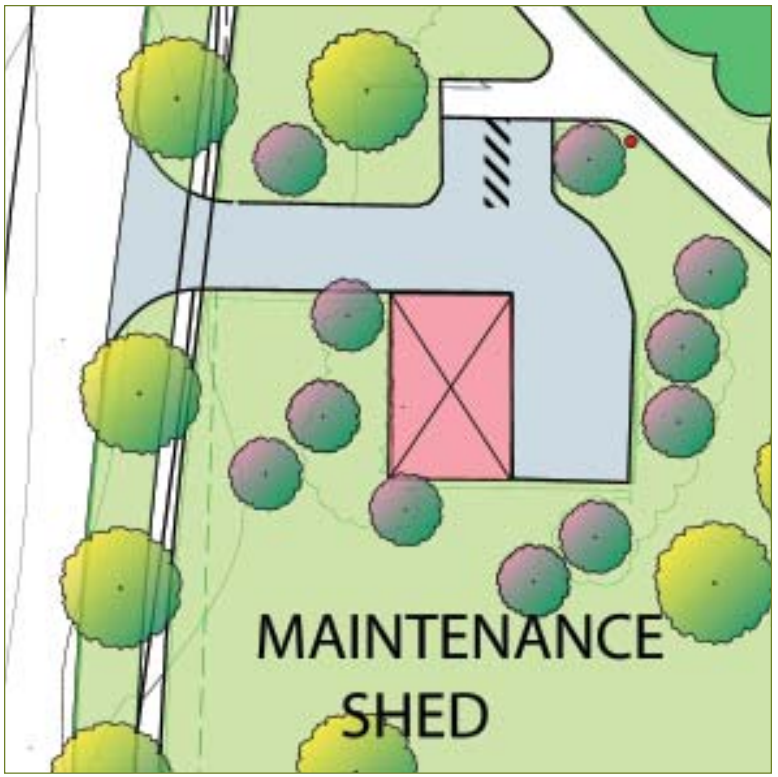
Striped crosswalks should be provided at Matthew and McKinley Streets, plus the mid-block crosswalk that exists already, and including traffic signs warning of pedestrian crossings in that area.

Vegetation

A shrub barrier needs to be planted behind and to the north of the pond to prevent access. The gazebo area should be more formally planted with ornamental trees and shrubs. Along the paths, a loose allée of trees should be established to provide shaded seating areas. Street Tree planting is proposed for the existing planting median between the sidewalk and street along Broadway. With the installation of vertical granite curbing that separates vehicular circulation from pedestrians, a tree-lined buffer can be established to further differential those two uses.

The park edges adjacent to abutters' property to the north and south should be planted with a mixed border of ornamental trees and shrubs. These buffers will indicate to park visitors when they have left the park and trespassed onto private property. It will also help reduce park use noises from disturbing the immediate adjacent neighbors.

Planted buffers at the parking lot should be used to reduce the appearance of a large area of paved surface. Planted buffers should be installed to screen the parking lots from the residential neighborhood.



Maintenance Building (above)

The arborist has recommended the following actions to be taken to improve the health of the existing trees on site:

a. Prune out all deadwood and declining branches.

b. Install a woodchip bed of mulch around the trees' critical root zone out to the drip line (and larger, if possible).

c. Irrigate the trees as needed.

d. Perform soil tests and make adjustments to the pH and micronutrients as needed; check the drainage of the soil around the trees.

e. Apply a quick release fertilizer twice a year during the growing season, every year, until a desired growth rate is achieved. Apply beneficial mycorrhizae to improve the trees uptake of nutrients. After an acceptable level of growth has been achieved, the trees should be put onto a routine fertilizing program every other year or as soil test results require.

f. Vertical mulch the trees to improve the soil and alleviate soil compaction. Vertical mulching entails using a metal auger, about 2" in diameter, and inserting it 12" deep into the ground to create a hole. This augering should start one to three feet from the trunk of the tree, and extend half again the diameter of the tree's canopy beyond the drip line. The holes are spaced every two (2) feet. The holes are then filled with a mixture of compost, sand, soil amendments and soil modifiers. This process is performed over a number of years to improve compacted soils.

g. Monitor trees for insects and treat infestations. Typical treatments would address aphid and/or beech bark scale infestations, and for phytopthora.

Phasing of Improvements/Costs

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
PHASE I TOT LOT					
Topsoil stripping, screening and stockpiling	740	CY	$5	=	$3,700
Gravel backfilling and grading	180	CY	$20	=	$3,600
Precast concrete curbing, vertical	251	LF	$15	=	$3,765
Underdrainage	280	LF	$25	=	$7,000
Leaching basin	1	EA	$7,500	=	$7,500
Bituminous concrete paving @ pathway	3,000	SF	$3	=	$9,000
Chain link fence and gate	251	LF	$20	=	$5,020
Fibar surfacing	5,000	SF	$2	=	$10,000
Picnic shelter, 25' x 50'	1	EA	$50,000	=	$50,000
Bench	8	EA	$2,000	=	$16,000
Picnic table	6	EA	$2,000	=	$12,000
Trash receptacle	2	EA	$1,500	=	$3,000
Loam and seed	11,800	SY	$10	=	$118,000
			SUBTOTAL		$248,585
			15% CONTINGENCY		$37,288
			TOTAL PHASE 1		**$285,873**
			Cost/SF Impact Area		$14
PHASE II MAINTENANCE SHED AREA					
Topsoil stripping, screening and stockpiling	520	CY	$5	=	$2,600
Gravel backfilling and grading	118	CY	$20	=	$2,360
Granite street curbing, vertical	300	LF	$40	=	$12,000
Bituminous concrete paving @ parking	3,200	SF	$4	=	$12,800
Bituminous concrete paving @ pathway	500	SF	$3	=	$1,500
Striping	80	LF	$5	=	$400
Maintenance Shed	1	EA	$50,000	=	$50,000
Shrub	1,500	SF	$10	=	$15,000
Flowering tree	12	EA	$500	=	$6,000
Canopy tree	2	EA	$1,500	=	$3,000
Loam and seed	1,788	SY	$10	=	$17,880
			SUBTOTAL		$123,540
			15% CONTINGENCY		$18,531
			TOTAL PHASE 2		**$142,071**
			Cost/SF Impact Area		$9

Rollins Park, Phase I (above), Phase II (below)

Rollins Park, Phase III (above), Phase IV (below)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
PHASE III - Pool Area					
Remove building	1	EA	$10,000	=	$10,000
Shrub	5,100	SF	$10	=	$51,000
Evergreen tree	5	EA	$500	=	$2,500
Canopy tree	2	EA	$1,500	=	$3,000
Loam and seed	11,800	SY	$10	=	$118,000
			Subtotal Phase III - Pool Area		$184,500
			15% Contingency		$27,675
			Total Phase III - Pool Area		**$212,175**
PHASE IV - Parking					
Tree removal and grubbing	0.77	AC	$5,000	=	$3,850
Topsoil stripping, screening and stockpiling	1,240	CY	$5	=	$6,200
Gravel backfilling and grading	1,600	CY	$20	=	$32,000
Granite street curbing, vertical	1,400	LF	$40	=	$56,000
Storm drainage					
Catchbasin	2	EA	$5,000	=	$10,000
Manhole	3	EA	$7,500	=	$22,500
Piping	250	LF	$50	=	$12,500
Headwall	1	EA	$10,000	=	$10,000
Bituminous concrete paving @ parking	18,400	SF	$4	=	$73,600
Bituminous concrete paving @ pathway	3,360	SF	$3	=	$10,080
Striping	1,040	LF	$5	=	$5,200
Lighting	9	EA	$5,000	=	$45,000
Park entry sign	1	EA	$5,000	=	$5,000
Park informational kiosk	1	EA	$15,000	=	$15,000
Shrub	4,000	SF	$10	=	$40,000
Flowering tree	3	EA	$500	=	$1,500
Canopy tree	19	EA	$1,500	=	$28,500
Loam and seed	1,788	SY	$10	=	$17,880
			Subtotal Phase IV - Parking		$394,810
			15% Contingency		$59,222
			Total Phase IV - Parking		**$454,032**
			cost per parking space		$7,567

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase V - Fields and Court Area					
Topsoil stripping, screening and stockpiling	7,585	CY	$5	=	$37,925
Remove building	1	EA	$10,000	=	$10,000
Electric supply 4/4" conduits, conc. encased	200	LF	$150	=	$30,000
Gravel backfilling and grading	8,000	CY	$20	=	$160,000
Clay infield	1,711	SF	$3	=	$5,133
Bituminous concrete paving	500	SF	$3	=	$1,500
Restroom shelter, 20' x 20'	1	EA	$50,000	=	$50,000
Electric cabinet	1	EA	$25,000	=	$25,000
Bench	5	EA	$2,000	=	$10,000
Trash receptacle	7	EA	$1,500	=	$10,500
Bleacher	120	LF	$100	=	$12,000
Team bench	80	LF	$20	=	$1,600
Chain link backstop	640	LF	$50	=	$32,000
Flowering tree	4	EA	$500	=	$2,000
Loam and seed	**22,755**	SY	$10	=	$227,550
			Subtotal Phase V - Fields and Court Area		$615,208
			15% Contingency		$92,281
			Total Phase V - Fields and Court Area		**$707,489**
			cost per square foot		$3

Phase VI - Park Center and Approaches					
Topsoil stripping, screening and stockpiling	734	CY	$5	=	$3,670
Gravel backfilling and grading	800	CY	$20	=	$16,000
Bituminous concrete paving	19,840	SF	$3	=	$59,520
Gazebo	1	EA	$40,000	=	$40,000
Bench	13	EA	$2,000	=	$26,000
Trash receptacle	9	EA	$1,500	=	$13,500
Shrub	8,200	SF	$10	=	$82,000
Flowering tree	34	EA	$500	=	$17,000
Canopy tree	48	EA	$1,500	=	$72,000
Loam and seed	2,200	SY	$10	=	$22,000
			Subtotal Phase VI - Park Center and Approaches		$351,690
			15% Contingency		$52,754
			Total Phase VI - Park Center and Approaches		**$404,444**
			cost per square foot		$8

Rollins Park, Phase V (above), Phase VI (below)

Rollins Park, Phase VII (above), Phase VIII (below)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase VII - Bow Street Improvements					
Granite street curbing, vertical	900	LF	$40	=	$36,000
Bituminous concrete walkway	5,400	SF	$4	=	$21,600
Bituminous concrete patch	5,400	SF	$3	=	$16,200
Canopy tree	23	EA	$1,500	=	$34,500
Loam and seed	1,000	SY	$10	=	$10,000
	Subtotal Phase VII - Bow Street Improvements				$118,300
			15% Contingency		$17,745
	Total Phase VII - Bow Street Improvements				**$136,045**
			cost per square foot		$7
PHASE VIII - Broadway Street Improvements					
Granite street curbing, vertical	1,020	LF	$40	=	$40,800
Crosswalk striping	3	EA	$1,000	=	$3,000
Bituminous concrete patch	4,850	SF	$3	=	$14,550
Park entry sign	1	EA	$5,000	=	$5,000
Park informational kiosk	1	EA	$15,000	=	$15,000
Shrub	9,700	SF	$10	=	$97,000
Canopy tree	26	EA	$1,500	=	$39,000
Loam and seed	566	SY	$10	=	$5,660
	Subtotal Phase VIII - Broadway Street Improvements				$220,010
			15% Contingency		$33,002
	Total Phase VIII - Broadway Street Improvements				**$253,012**
			cost per square foot		$13

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase IX - North Edge Buffer					
Shrub	19,200	SF	$10	=	$192,000
Flowering tree	15	EA	$500	=	$7,500
Evergreen tree	33	EA	$500	=	$16,500
Canopy tree	10	EA	$1,500	=	$15,000
	Subtotal Phase IX - North Edge Buffer				$231,000
			15% Contingency		$34,650
	Total Phase IX - North Edge Buffer				**$265,650**
			cost per square foot		$14
Phase X - Southern Edge Buffer					
Shrub	6,300	SF	$10	=	$63,000
Flowering tree	6	EA	$500	=	$3,000
Canopy tree	11	EA	$1,500	=	$16,500
	Subtotal Phase X - Southern Edge Buffer				$82,500
			15% Contingency		$12,375
	Total Phase X - Southern Edge Buffer				**$94,875**
			cost per square foot		$15

Rollins Park, Phase IX (above), Phase X (below)

Rollins Park, Phase XI (above), Phase XII (below)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase XI - Pond Area					
Pond Restoration	1	LS	$100,000	=	$100,000
Excavation	1,000	CY			
Clay Liner	12,800	SF			
Stone wall repair/repointing	740	LF			
1/4 hp aerator system	1	LS			
connection to city water supply	1	LS			
Bridge repair	1	LS	$5,000	=	$5,000
Concrete paving	800	SF	$6	=	$4,800
Bituminous concrete paving	240	SF	$3	=	$720
Bench	2	EA	$2,000	=	$4,000
Shrub	200	SF	$10	=	$2,000
Flowering tree	5	EA	$500	=	$2,500
Loam and seed	1,644	SY	$10	=	$16,440
			Subtotal Phase XI - Pond Area		$135,460
			15% Contingency		$20,319
			Total Phase XI - Pond Area		**$155,779**
			cost per square foot		$6
Phase XII - Southern Trail					
Topsoil stripping, screening and stockpiling	302	CY	$5	=	$1,510
Gravel backfilling and grading	350	CY	$20	=	$7,000
Stone dust paving	8,160	SF	$1	=	$8,160
Loam and seed	906	SY	$10	=	$9,060
			Subtotal Phase XII - Southern Trail		$25,730
			15% Contingency		$3,860
			Total Phase XII - Southern Trail		**$29,590**
			cost per square foot		$2

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase XIII - Northern Trail					
Topsoil stripping, screening and stockpiling	273	CY	$5	=	$1,365
Gravel backfilling and grading	300	CY	$20	=	$6,000
Stone dust paving	7,380	SF	$1	=	$7,380
Bench	4	EA	$2,000	=	$8,000
Trash receptacle	2	EA	$1,500	=	$3,000
			Subtotal Phase XIII - Northern Trail		$25,745
			15% Contingency		$3,862
			Total Phase XIII - Northern Trail		**$29,607**
			cost per square foot		$4
Phase XIV - Picnic Area					
Tree removal and grubbing	1.00	LS	$5,000	=	$5,000
Topsoil stripping, screening and stockpiling	470	CY	$5	=	$2,350
Gravel backfilling and grading	500	CY	$20	=	$10,000
Stone dust paving	12,720	SF	$1	=	$12,720
Picnic tables	8	EA	$2,000	=	$16,000
Trash receptacle	5	EA	$1,500	=	$7,500
Flowering tree	2	EA	$500	=	$1,000
Canopy tree	7	EA	$1,500	=	$10,500
			Subtotal Phase XIV - Picnic Area		$65,070
			15% Contingency		$9,761
			Total Phase XIV - Picnic Area		**$74,831**
			cost per square foot		$2

Rollins Park, Phase XIII (above), Phase XIV(below)

Rollins Park, Phase XV (above)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
PHASE XV NORTH FIELD					
Repair water service	1	LS	$10,000	=	$10,000
			SUBTOTAL		$10,000
			15% CONTINGENCY		$1,500
			TOTAL PHASE 15		**$11,500**

Summary

Total Phase 1 - Tot Lot	$285,873
Total Phase 2 - Maintenance Shed Area	$142,071
Total Phase 3 - Pool Area	$212,175
Total Phase 4 - Parking Lot	$454,032
Total Phase 5 - Fields and Court Area	$707,489
Total Phase 6 - Park Center and Approaches	$415,944
Total Phase 7 - Bow Street Improvements	$136,045
Total Phase 8 - Broadway Street Improvements	$253,012
Total Phase 9 - Northern Edge Buffer	$265,650
Total Phase 10 - Southern Edge Buffer	$94,875
Total Phase 11 - Pond Area	$420,279
Total Phase 12 - Southern Trail	$29,590
Total Phase 13 - Northern Trail	$29,607
Total Phase 14 - Picnic Area	$74,831
Total Phase 15 - North Field	$11,500
GRAND TOTAL	**$3,532,970**
cost per square foot	***$4***

White Park

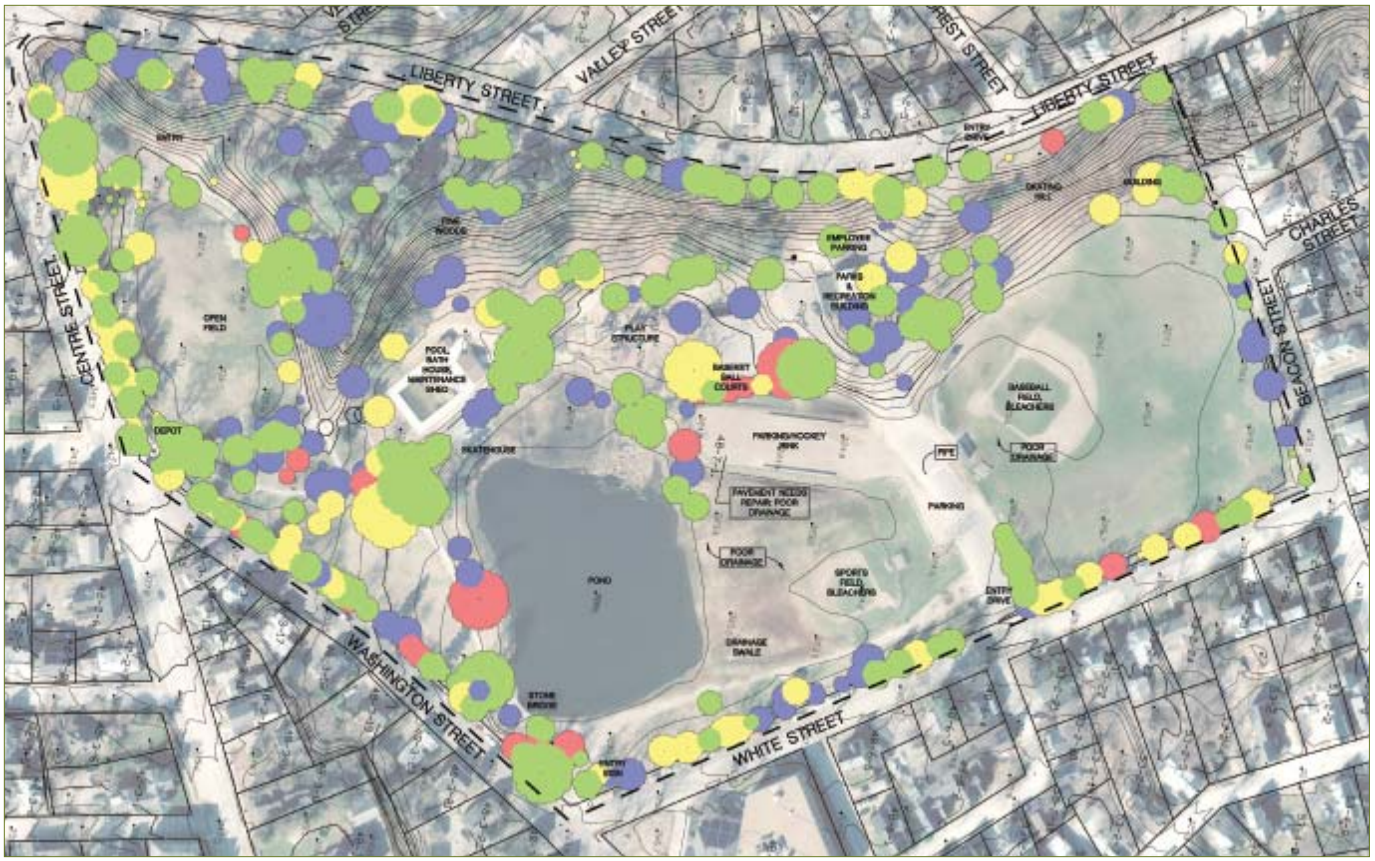
Park Description

In 1884, the City of Concord received a gift of land from Armenia White, in memory of her husband, Nathaniel White (founder of American Express Company). This 23.4 acre site's boundary is defined by five residential streets (Washington, Centre, White, Liberty, and Beacon). It was largely undevelopable due to steep slopes along the western edge and swampy areas as a result of a high water table in much of the lower, flatter areas. In the mid- to late-1880's, the renowned Landscape Architect, Charles Eliot, was hired to design a park for this site; the design began to be implemented beginning 1889 and continued through much of the 1890's.

Two ponds were excavated to help direct the flow of water from the hillside fresh-water springs into an upper and lower basin. The lower basin also helped to collect surface water. Excess water eventually left the site through underground conduits. Underground pipes were later installed to achieve additional drainage in saturated areas. Lowland areas were filled with the material excavated in creating the basins, raising the elevation of the lowlands.

Other elements on this site include a stone bridge still in existence. It was designed by local Architect George B. Howe and constructed in 1896. The steel picket fence surrounding the site was built after 1905. The fieldstone shelter at the intersection of Washington and Centre Streets, built in 1906, is one of

White Park, Stone Bridge, 1935 (right)
Swimming, 1948 (below)



Site Analysis of White Park

the trolley stops of the defunct Concord Street Railway. The Recreation Department building was constructed in 1936-7 by Works Progress Administration labor. As of 1982, White Park has been listed in the National Register of Historic Places.

Existing Conditions/ Uses

Parking

Currently, there are three existing parking lots: the upper serving the Recreation Building, the middle that is converted to an ice hockey surface during the winter, and the lower that serves as year-round parking. The two lots for public use can accommodate approximately 84 vehicles. The lower and middle are poorly drained and previous efforts to direct water off to the sides have had mediocre results. The surface material of the upper and lower parking lots is bituminous concrete that is in poor condition, and the paving material of the middle parking lot is compacted crushed stone. There is no formal delineation of spaces in any of

these lots. There is also perimeter parking along White, Washington, and (less so) Liberty and Beacon Streets for park visitors. The number of these spaces is limited due to competition with the Franklin Pierce Law School.

Recreational Facilities and Open Space

Pond:

There is a 1-3/4 acre existing pond that has a number of problems. Its surface is reduced by invasive plant species like Common Reed (Phragmites australis). On several occasions, extraordinary and exceedingly costly efforts have been made to remove these invasive species through dredging, but this has not been successful as a permanent, long-term solution. The pond lacks a defining edge material, so where pond and lawn meet, water-saturated soil conditions result, primarily in the adjacent land to the north of the pond. In addition, runoff from the lawn areas introduces pesticides and fertilizers into the pond, accelerating algae growth and diminishing the pond's ability to support animal life. There is no barrier-free access to the water's edge.

Despite these shortcomings, the pond is a beautiful amenity to the park. An attractive fountain spray keeps the pond well aerated, thus helping to reduce eutrophication and keeping the growth of algae in control. The pond does support small fish, frogs, and turtles, much to the delight of the public. During the winter, the level of water in the pond is raised and the surface is cleared of snow and used for ice skating.

Sports fields/courts:

There are areas on the baseball field that are poorly drained (local low points). The baseball field has historic importance, is well used, and the outfields double as soccer fields. The area between the pond and the existing parking lot has a backstop and is used as a t-ball field for field sports for much smaller children. Due to a high water table, this area is not dependable in providing a sufficiently dry field to schedule competition play. The area designed as open space in the southwest corner of the park is perpetually moist, possibly indicating a high water table at this spot or perhaps a quaking bog that has progressed to open field.

White Park, Existing Pond (top)
Open Space, Southwest Corner (bottom)

Historic shower/changing facilities(above)
Existing Path (below)

The basketball courts are in satisfactory condition. There is a vertical wall towards the rear of the courts which is used to practice tennis that is in good condition. During the winter months, barriers are erected around the middle parking lot and the area is flooded and used for ice hockey. The community has expressed a strong desire to continue providing separate areas for ice skating and ice hockey.

Buildings:
The existing skate house is positioned slightly below grade and allows interior access on skates during the winter season. Its condition is degrading quickly since it was constructed without forethought as to the effects of the high water table. In 2004, The City hired Nobis Engineering to perform an evaluation of existing park structures. In summary, their evaluation of this building indicated that the cost to renovate this structure would be equal to a substantial portion of the cost to build a new structure. They recommended that a new structure be built that it be built on a different portion of the pond site.

There is a building at one of the high points of the park that houses the Recreation Department. The structure is sound, there are no apparent drainage issues, and recent efforts have been made to make it handicap accessible. The only recommendations for the structure are cosmetic.

There is a smaller building in poor shape that is of historic nature. It once housed showers and changing facilities for the Sunset Baseball games, but is currently used for maintenance purposes.

Pedestrian/Vehicular Access and Circulation

There are several entrances into this park. There is an opening in the fence in the northwest portion of the park adjacent to Beacon Street that gives maintenance and emergency vehicles access to the fields below. Along Beacon Street, across from Charles Street, there is an at-grade entrance with a bollard to prevent vehicular access. In the northeast, there is a stone staircase to the sports fields (no paved surface). There is an entrance along White Street, across from Blanchard Street. There is a well-marked main pedestrian entrance at the

intersection of White and Washington Streets and another where Pine Street meets Washington and Centre Streets adjacent to the former trolley stop. There is a pedestrian entrance at the intersection of Centre and Liberty Streets. Several informal (unpaved) paths off Liberty Street also enter the park.

On White Street, the narrow entrance to the parking area is the main vehicle entrance allowing only one vehicle through at a time. There is vehicular access to the Recreation Building along Liberty Street that has been closed off to prevent through traffic between White Street and Liberty Street and to points north and west.

The existing paths are stonedust and bituminous concrete and their condition varies from poor to acceptable. There are no apparent wear lines (desire lines) in the lawn, which would indicate that this pedestrian system meets current needs.

Playground

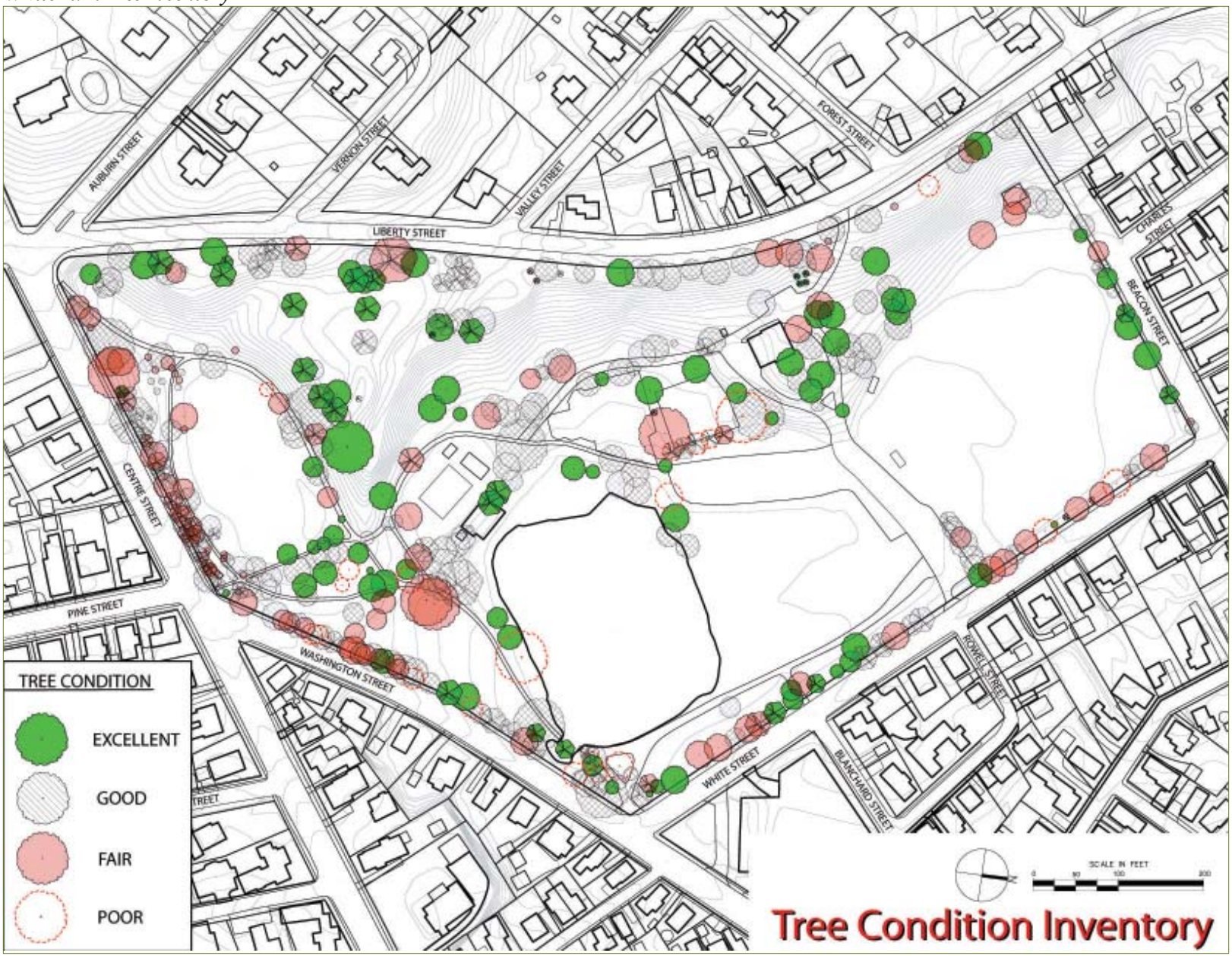
The current wood play structure would not meet current safety codes (it is grandfathered), but is extremely popular with children, and one of the major draws to this park over many other community parks. It remains in fairly good condition, but that is due to an increased attention to its maintenance as the structure ages. The play area surface is wood fiber with edging.

Vegetation

The Friends of White Park have performed a tree inventory of significant vegetation in the park (see tree inventory on the following page). Besides that which has been identified, there are stands of Pine that are in satisfactory condition in the area to the north and west of the open space and along Liberty Street.

Existing Play Structure (above)

White Park Tree Inventory



White Park Master Plan Recommendations

White Park, Parking (top)
Open Space, Realigned Fields (bottom)

Recommendations (Master Plan)

Parking

The proposed parking lot has been moved closer to the road and there would be a separate entrance and exit into the parking area with one-way traffic circulation. The design shown in the Consensus Master Plan widens the already existing pedestrian access at Blanchard Street, expanding that entrance in the fence to permit Exit Only traffic. The new lot configuration includes a pedestrian drop-off lane suitable for the stacking of buses and cars. This new configuration slightly increases the parking capacity to be 92. Some spaces in this lot can be designated for Recreation Department employee use only.

By providing a vertical curb edge along the park side of Liberty Street, it will be possible to safely define on-street parallel parking by expanding the width of the street where practical. The roadway width will return to its existing limits at the crosswalks and where expanding the road would negatively impact mature vegetation. Parking along Beacon, White, Washington, and Centre Streets will be unmodified.

Recreation Facilities and Open Space

Sports Fields:
The baseball field should be realigned for two reasons: 1) it improves solar orientation of the field, and 2) it relocates the field to higher ground which will improve drainage. There is indication, because of the historic structure in that location, that the field may have once been oriented this way. The soccer fields will remain in the outfield where they currently exist.

When the field is realigned, the area should be excavated and the field installed as stated in the generation recommendations. This underdrainage system should connect to the existing storm water management system. Recognizing the high water table, if this connection is not feasible, dry wells to receive water from the underdrainage system should be installed below the playing fields on the Beacon Street side of the park where the elevation is higher.

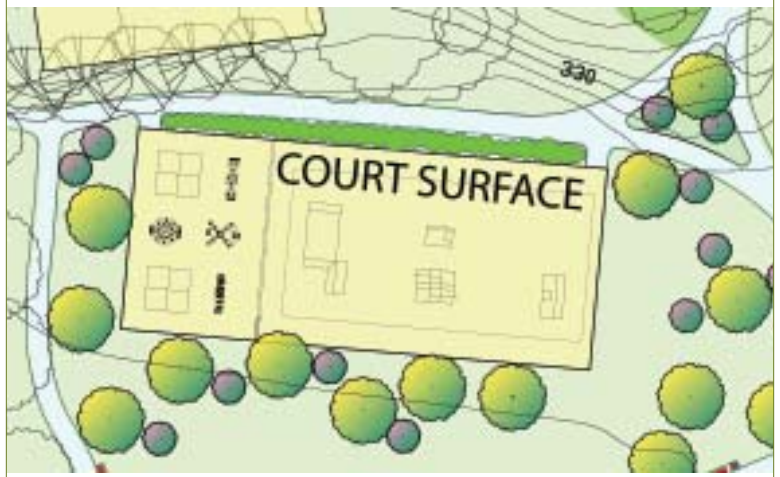
Pond:
Phragmites can be treated successfully with glyphosate when plants are actively growing and are at mid- to full-bloom (late July through October but before a killing frost). It is a broad spectrum aquatic herbicide that is virtually nontoxic to mammals, birds, and fish when used according to instructions. It can be purchased at any store that sells agricultural chemicals.

Skate House/Recreation Building:
A new multipurpose building is proposed to be erected adjacent to the new parking lot. This will serve as administrative offices for the Recreation Department, will have a year-round bathroom facility associated with it, will be a nexus for information (events), and will also be the skate house during the winter. There will be a small patio with seating between the building and the pond. This structure should be designed with the guidelines provided in the general recommendations for buildings built in areas with unsuitable soils.

Picnic Facilities:
Tables and trash receptacles should be added in the woods in the western part of the park. Access to these facilities will be off of Liberty Street

Ice Hockey/Skate Park:
A smooth, durable surface such as a concrete slab with improved underdrainage is proposed to serve multi-seasonal recreational purposes. Concrete provides a smooth, durable surface that is impact and wear resistant, and given proper drainage, is resistant to potholes and frost heaves. During the summer, the pavement will be divided with barriers and a larger portion of the slab will be designated as a skate park with structures that can be removed and stored at season's end. The other portion of the slab will have painted graphics for hardscape children's activities like four-square and hopscotch. During the winter, a 6-10 mil polyethylene rink liner will be laid across the slab to provide a leak-proof base for the skating areas, with barriers erected along the perimeter.

White Park, Skate House and Hockey Building (top)
Court Surface (bottom)



Outdoor ice hockey rinks that are created by flooding and air freezing can be placed on almost any surface after the ground freezes. Many municipalities flood low, field areas while others use tennis and basketball courts. A 6-10 mil polyethylene rink liner is utilized to provide a leak-proof base for the skating areas.

Where the facility may be used as a skateboard park during the non-winter months, a smooth durable surface is a critical need. Concrete presents the most desirable material for this use. Advantages of concrete versus other materials include toughness (impact and wear resistance), flexibility (ability to control the cement/aggregate/water ratios to attain the desired strength and surface characteristics), and resistance to potholes/frost heaves.

The long-term durability of a concrete slab-on-grade surface will largely depend on how free draining the underlying soils are. Frost heaves and potholes are problems created by moisture in relatively fine-grained soils. Moisture can accumulate not only as a result of precipitation, but also by capillary action that sucks moisture up from the groundwater table. The best prevention is to remove frost susceptible soils from the area below the proposed rink surface. Where that method is cost prohibitive, benefits can be gained by installing a subdrain system and/or a free draining base below the concrete slab. The subdrains would convey the water away to a surface drainage system while the free draining base (4-6 inches of coarse sand or fine stone) would serve as a buffer between the poor soils and the slab.

Buildings and parking facilities are often constructed in places where the subsurface materials have poor mechanical properties and are subject to significant settlement under imposed loads. Solutions vary depending on the structure type, size and load as well as by the depth and thickness of the poor strata. Where the unsuitable soils are relatively close to the surface and are not too thick (7-8 feet), it is usually economical to remove the poor soils and backfill with a compacted structural borrow up to the frost or base course depth. Buildings would then be founded on shallow, spread footings. Parking lots would be built directly above the new subbase material.

Where over-excavation is not economical, buildings can be constructed on deep foundations (drilled piers or driven piles). These types of footings transfer the building load through the unsuitable soils and into the more competent strata below. Again, the choice of deep foundation type comes down to the depth and character of the subsurface strata. Generally, if the soils below the unsuitable soils are dense, gravelly deposits, a drilled foundation is typically used. If the subsoils are sandy, driven piles are often more economical.

Sometimes rather than excavating or constructing deep foundations, owners and engineers will take measures to stabilize the unsuitable materials. This action can be taken to support either buildings or parking areas and fields. Preloading is a common method of preconstruction stabilization of poor subsoils. Preloading is applicable to compressible soils (typically peaty and clayey soils) having a high water content. Soils are preloaded by constructing embankments with sand or stone over the surface, and impose a load that is greater than the anticipated building load. The embankment serves to wring moisture out of the soil matrix causing the poor soil to consolidate. On the surface, the consolidation is observed as settlement. Depending on the subsurface soil characteristics, preloading can be a time consuming endeavor. However, use of

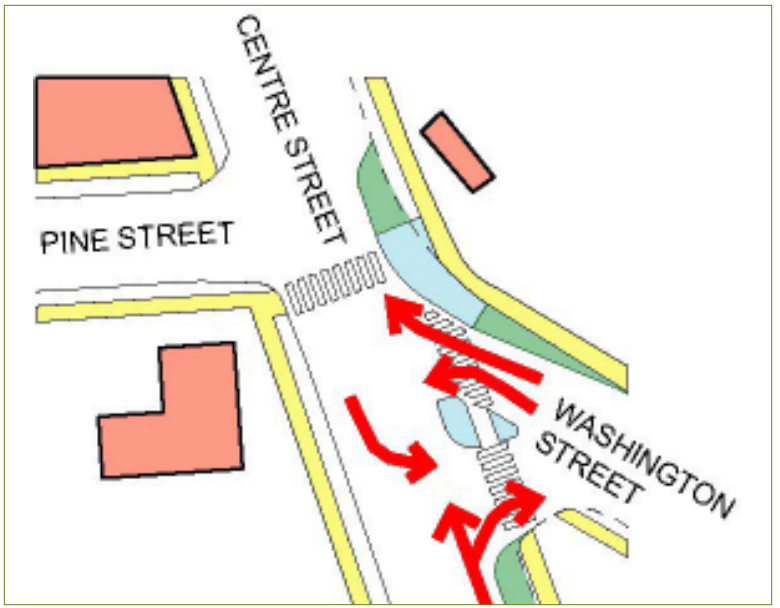
vertical wick drains and a drainage blankets can reduce the time dependency. These features offer a means for the water being squeezed out of the soil matrix to drain faster, leading to faster consolidation of the soil mass. After consolidation of the unsuitable layer, the embankments are removed. Buildings are then usually constructed on a shallow footing, and parking lots are built to their final grades.

Other, more complex methods of soil stabilization are sometimes employed for critical structures. These methods include soil mixing and grout injection. However these methods are very expensive and not typically used for small municipal facilities.

Before a soil stabilization method can be established, a subsurface investigation consisting of borings and soil testing is required to establish the stratification and mechanical properties. With this information, the engineer can make a determination of what actions should be taken to support the proposed facilities.

Pedestrian/Vehicular Access and Circulation

The community has stated that getting to the park by crossing Centre Street, especially around the Washington Street intersection, has been difficult and dangerous. Two factors contribute to this. The first is that, for a busy street, the street is fairly wide and crossing times, especially for small children, are long. Centre Street is about fifty (50) feet wide at this intersection, and crossing distance from one corner to the other across Washington Street is about one hundred (100) feet. The second factor that contributes to this hazardousness intersection is that, with the broad expanse of roadway at this intersection, the paths cars can take are unstructured, and therefore hard to anticipate. A solution that met with community approval is shown here. There are neck downs along Centre Street on either side of the Washington Street intersection. This reduces the Centre Street crossing distance to thirty-six (36) feet. The neck down at the eastern corner of this intersection encourages cars to drive slower where the road has narrowed.



Pedestrian access across Centre and Washington Streets

By adding a pedestrian island in the middle of the Washington Street crossing, it provides an oasis where pedestrians can stop and evaluate traffic conditions before proceeding to cross and reduces the individual crossing times. It also helps structure vehicular circulation. Traffic on Washington Street heading north on Centre Street will be approaching this intersection at right angles, improving sight lines. Traffic heading north on Centre Street turning onto Washington Street will also be making a right-angle turn, reducing the time of potential vehicular conflict. It is recommended that a traffic engineering study be performed before any course of action is taken.

The Consensus Master Plan shows a separation of pedestrian and vehicular accesses to the park along White Street. With the installation of vertical granite curb along Liberty Street that defines parallel parking along the road edge, a walk along Liberty Street can be installed with safe separation of vehicular and pedestrian circulation.

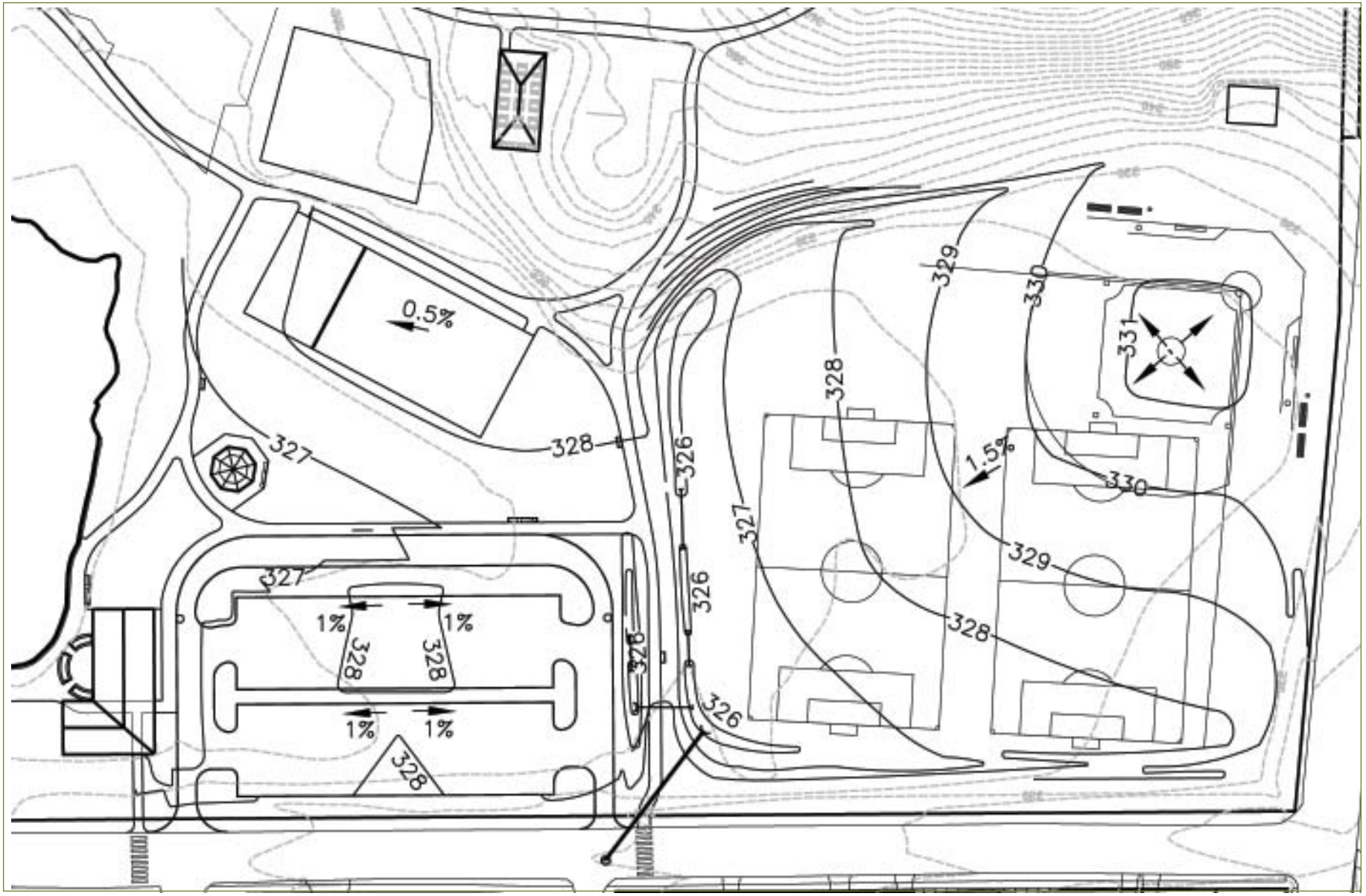
The proposed path system is intended to bring barrier-free access to portions of the pond's edge. It will service a new Multi-Purpose building, a new picnic shelter, a new gazebo, the new court surfaces, as well as all the existing amenities (pool, playground, basketball courts). The path off of Liberty Street that currently provides vehicular access will be narrowed to accommodate the vehicle access to maintenance vehicles. Otherwise, this entrance will be inaccessible to vehicular traffic through the use of bollards and chains, but will continue to serve as a pedestrian access off of Liberty Street.

Site Grading

The conceptual grading plan designed for White Park addresses the drainage problems that exist in the ball fields and parking lot. The re-orientation of ball fields gives the City an opportunity to provide underdrainage as detailed in the General Recommendations section of this report. Surface drainage of this site is to proposed area drains which connect to existing drain lines on White Street. The fields are sloped to provide positive drainage to these drains. Drainage structures have been provided in the paved lot. The existing pipes are only eight (8) inches in diameter and may not have sufficient capacity. It should be noted that the time of concentration for the stormwater from the Park will be delayed after the roadway surface drainage, so the existing pipes may have sufficient capacity. A more detailed engineering evaluation needs to be performed to determine the conditions of the storm water drainage system along White Street and if it has sufficient capacity to handle both the roadway drainage and the field and parking lot drainage from the park.

The conceptual grading plan also provides for a shallow slope across the concrete pad for the skate park. This allows for a liner to be installed during the winter months to retain water for ice hockey. The parking lot has been elevated to improve vehicular sight lines at the White Street entrance/exit. The pedestrian paths off of White Street are handicap-accessible.

Conceptual Grading Plan



Phasing of Improvements/Costs

White Park, Phase I (above)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase I - Central Area					
Site preparation					
Remove paving	15,000	SY	$7.00	=	$105,000
Excavate and remove fields to 12" depth	5,900	CY	$12.00	=	$70,800
Parking and entrance drives					
Granite street curbing	2,160	LF	$40.00	=	$86,400
Bituminous concrete paving	35,800	SF	$3.00	=	$107,400
Drainage - catchbasins	8	EA	$5,000.00	=	$40,000
Painting / striping/ crosswalks	540	SF	$3.00	=	$1,620
Lighting	11	EA	$5,000.00	=	$55,000
Skate Park/Court game area					
Concrete paving	13,125	SF	$5.00	=	$65,625
Painting (4 square, hopscotch, etc.)	3,281	SF	$3.00	=	$9,844
Skateboard Components (allowance)	1	LS	$50,000.00	=	$50,000
Walkways					
Bituminous concrete paving	8,640	SF	$3.00	=	$25,920
Lighting	3	SF	$5,000.00	=	$15,000
Sports fields					
Filling and Grading 12" (160,000SF)	5,925	CY	$8.00	=	$47,400
6" Loam	2,962	CY	$18.00	=	$53,316
Seed	160,000	SF	$1.00	=	$160,000
Drainage and underdrainage	1,600	KSF	$100.00	=	$160,000
Bleacher 4 X 30'	120	LF	$100.00	=	$12,000
Team bench 12X 20'	240	LF	$20.00	=	$4,800
Chain link backstop	380	LF	$50.00	=	$19,000
Sports lighting	10	SF	$20,000.00	=	$200,000
Gazebo	1	EA	$42,000.00	=	$42,000
Site furnishings					
Bench	10	EA	$2,000.00	=	$20,000
Trash receptacle	7	EA	$1,500.00	=	$10,500
Signage 2 entry, 4 directional	1	LS	$15,000.00	=	$15,000
Planting					
6" Loam	1,460	CY	$18.00	=	$26,280
Seed	78,795	SF	$1.00	=	$78,795
Shrub (570 SF)	1	LS	$6,000.00	=	$6,000
Flowering tree	24	EA	$500.00	=	$12,000
Canopy tree	38	EA	$1,500.00	=	$57,000
			Subtotal Phase I - Central Area		$1,556,700
			15% Contingency		$233,505
			Total Phase I - Central Area		**$1,790,205**
			Cost per Square Foot		$6

Description			*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase II- Pond and Multi-purpose Building							
Site preparation and grading			1	LS	$10,000.00	=	$10,000
Demolish skate house			1	LS	$20,000.00	=	$20,000
Walkways	Bituminous concrete paving		7,200	SF	$3.00	=	$21,600
Lighting			8	EA	$5,000.00	=	$40,000
Pond restoration							
	Dredging	81,600 SF	1	LS	$150,000.00	=	$150,000
	Granite edge	500 LF	1	LS	$25,000.00	=	$25,000
	Stabilize edges	660 LF	1	LS	$10,000.00	=	$10,000
Multi-purpose building		allowance	1	LS	$800,000.00	=	$800,000
Site furnishings							
	Bench		14	EA	$2,000.00	=	$28,000
	Trash receptacle		7	EA	$1,500.00	=	$10,500
			1	LS	$10,000.00	=	$10,000
Planting							
	Shrub	720 SF	1	LS	$7,000.00	=	$7,000
	Flowering tree		9	EA	$500.00	=	$4,500
	Canopy tree		4	EA	$1,500.00	=	$6,000
					Subtotal Phase II - Pond and Multi-Purpose Building		$1,142,600
					15% Contingency		$171,390
					Total Phase II - Pond and Multi-Purpose Building		**$1,313,990**
					Cost per Square Foot		$7
Phase III - Meadow Area							
Site preparation			1	LS	$10,000.00	=	$10,000
	Demolish and remove walkways						
New intersection							
	New crosswalks		795	SF	$3.00	=	$2,385
	Granite street curbing		200	LF	$40.00	=	$8,000
	Concrete paving		900	SF	$5.00	=	$4,500
Walkways							
	Bituminous concrete paving		1,560	SF	$3.00	=	$4,680
	Repair existing walkways	8880 SF	1	LS	$20,000.00	=	$20,000
	Stabilized soil pathway		660	SF	$3.00	=	$1,980
Lighting			7	EA	$5,000.00	=	$35,000
Site furnishings							
	Bench		10	EA	$2,000.00	=	$20,000
	Trash receptacle		5	EA	$1,500.00	=	$7,500
Signage	2 large 2 small		1	LS	$10,000.00	=	$10,000
Loam and seed			56,000	SF	$1.50	=	$84,000
					Subtotal Phase III - Meadow Area		$208,045
					15% Contingency		$31,207
					Total Phase III - Meadow Area		**$239,252**
					Cost per Square Foot		$3

White Park, Phase II (above), Phase III(below)

White Park, Phase IV (above), Phase V (below)

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase IV -Picnic Shelter Area					
Site preparation and grading					
Demolish walkways	1	LS	$20,000.00	=	$20,000
Demolish existing administration building	1	LS	$20,000.00	=	$20,000
Walkways Bituminous concrete paving	4,800	SF	$3.00	=	$14,400
Lighting	3	EA	$5,000.00	=	$15,000
Picnic Shelter Facility					
Picnic shelter, 30' x 64'	1	EA	$30,000.00	=	$30,000
Grill	4	EA	$2,000.00	=	$8,000
Picnic table	10	EA	$2,000.00	=	$20,000
Site furnishings					
Bench	2	EA	$2,000.00	=	$4,000
Trash receptacle	7	EA	$1,500.00	=	$10,500
Signage	1	LS	$8,000.00	=	$8,000
Planting					
Loam and seed	7,900	SF	$1.50	=	$11,850
Flowering tree	3	EA	$500.00	=	$1,500
Canopy tree	3	EA	$1,500.00	=	$4,500
			Subtotal Phase IV - Picnic Shelter Area		$167,750
			15% Contingency		$25,163
			Total Phase IV - Picnic Shelter Area		**$192,913**
			Cost per Square Foot		$4
Phase V - Liberty Street Improvements					
Parking and Entrance Drives					
Granite street curbing	1,600	LF	$40.00	=	$64,000
Bituminous concrete paving	9,400	SF	$3.00	=	$28,200
Catchbasins	4	EA	$5,000.00	=	$20,000
Painting / striping / crosswalks	540	SF	$3.00	=	$1,620
Lighting	7	EA	$5,000.00	=	$35,000
Walkways					
Sawcut existing bituminous pavement	1,600	LF	$1.50	=	$2,400
Bituminous concrete paving	9,600	SF	$3.00	=	$28,800
			Subtotal Phase V - Liberty Street Improvements		$180,020
			15% Contingency		$27,003
			Total Phase V - Liberty Street Improvements		**$207,023**
			Cost per Square Foot		$7

Description	*Quantity*	*Unit*	*Unit Cost*		*Subtotal*
Phase VI - Picnic Area					
Site Furnishings					
Picnic table	5	EA	$2,000.00	=	$10,000
Trash receptacle	4	EA	$1,500.00	=	$6,000
Stone dust paving	3,350	SF	$1	=	$3,350
			Subtotal Phase VI - Picnic Area		$19,350
			15% Contingency		$2,903
			Total Phase VI - Picnic Area		**$22,253**
			Cost per Square Foot		$1

Summary

Total Phase I - Central Area		$1,790,205
Total Phase II - Pond and Multi-Purpose Building		$1,313,990
Total Phase III - Picnic Shelter Area		$239,252
Total Phase IV - Meadow Area		$192,913
Total Phase V - Liberty Street Improvements		$207,023
Total Phase VI - Picnic Area		$22,253
GRAND TOTAL		**$3,765,634**
Cost per Square Foot		$6

White Park, Phase VI (above)

General (All Parks)

Existing Conditions/ Uses

At the community meetings, many comments and concerns made were maintenance-related. Maintenance is always a budget issue, even in the best of economic times. The following suggestions address the communities' concerns and a means to implement the suggestions without greatly impacting the maintenance budget.

Comment: *Trash receptacles are frequently full to overflowing.*

Suggestions: Ideally, trash receptacles would be emptied more frequently than is currently being performed. An alternative that would require little change in the number of trash collection would be to make fewer 'regular/periodic' visits to empty the trash receptacles, and coordinate trash collections with the Recreation Department and the scheduling of sports fields/events.The following guidelines suggest when it would be appropriate to schedule collection:

- Field use that is scheduled to conclude near mealtimes (lunch, dinner) will generate more refuse.
- Field use during hot weather will generate more beverage-related trash.
- When field use is scheduled back-to-back with little or no break between uses, the first event will generate less trash than would be typical if the field use were isolated.

Comment: *The portable toilets are odiferous during the hot weather.*

Suggestions: All master plans propose introducing a year-round public restroom, eliminating the need for portable toilets and their issues. Until this component gets implemented, the following suggestions are being made:

- The portable toilets need to be emptied or exchanged with fresh ones on a more frequent basis (see above scheduling of trash collection).
- They should be situated in shaded areas; this will reduce the rate of anaerobic microbial growth, which is the cause of odors.

- The formula for the "chemical" component of the portable toilet should be researched. Most contain formaldehyde, paraformaldehyde, or quaternary ammonium compounds, which are injurious to the bacteria that break down these organic materials. In addition, there are safe, biological waste degraders, microbial and enzymatic products on the market that are additives to the storage tank that quickly break down natural waste products and toilet paper waste, thereby generating significantly less odor. In addition, these products work faster as temperatures rise.

Comment: *The lawns have degraded in quality since the division of the Parks and Recreation Department into Recreation Department and Grounds Division of the General Services Department.*

Suggestions: An external document entitled 'Lawn Maintenance Manual' has been written that describes current lawn maintenance practices used to preserve lawns in high use areas. These techniques may already be performed by the Grounds Division of the General Services Department, but are not able to be implemented to the frequency required due to budget constraints. In addition, increasing the number of available play fields, and reduce the frequency each individual field is utilized, will give the fields some time to recover.

Recommendations

Site Furnishings

For ease in maintenance and to help make the park(s) more cohesive, benches, trash receptacles, picnic tables and benches, and information kiosks should come from the same manufacturer and should be of the same style family and materials. The use of granite slabs as memorial benches should be discouraged. They appeal to the donor because they are relatively inexpensive and easy to obtain in the "Granite" State. They are uninviting to sit upon, being either too cold or too hot. They are simply fabricated (sawn top and bottom of slab, split-face all other edges, with two granite legs), so they are uncomfortable against the inside of the thigh at the knee joint and they offer no back support. Unless properly sloped and without any surface indentations or inscriptions, water collects on top and is slow to dry. Instead, donors should be encouraged to select from a limited palette of site furnishing manufacturers who can provide components in their catalogs which can be personalized.

Signage

Each park should have a prominent identifying sign at the primary pedestrian and vehicular entrances (they may not be in the same location). There is a standard park sign that the City of Concord has adopted. In addition, an information kiosk should be erected that would provide a graphic of the park denoting its features and amenities (paths, restrooms, etc.), as well as park rules and hours during which the park is open. There should be a place on this kiosk for local announcements and scheduled events (sports field reservations, evening entertainment).

Lighting

Through the use of functional and ornamental lighting, a park's usable hours can be extended. Officially, all of the parks close at 11:00pm, but with the dearth of lighting interior to the parks, residents are reluctant to enter after dusk due to a perceived safety risk. Police are unable to monitor park activity much beyond the perimeter. These poorly lit areas become deserted land in the evenings, and open themselves up to

objectionable activities, and creating the safety risk that was only perceived before. The following lighting guidelines should be considered when being incorporated into the parks. When deciding upon a particular light fixture, consider that the higher the source of the light, the further the light can be cast, and the fewer the number of light fixtures would be required to adequately illuminate a space. It also increases the risk of glare to adjacent properties and adjacent park uses. Light fixtures should be properly shielded from adjacent residences with cutoffs that generate not more than ten (10) percent of peak intensity radiating above eighty (80) degrees from the light source, and no more than 2.5 percent above ninety (90) degrees:

- Court (Tennis/Basketball) Lighting - Court lighting should automatic cutoff at a prescribed time. The parks officially close at 11:00 pm, so court lighting should be on a timer, terminating no later than 10:30pm.
- Pedestrian Lighting - Smaller scale, ornamental lighting should be provided along pedestrian paths that lead from parking areas to the various site amenities.
- Parking Lot lighting - Parking Lot lighting should automatic cutoff at a prescribed time. The parks officially close at 11:00 pm, so parking lot lighting can also be on a timer, terminating at 11:00pm
- Sports Field Lighting. - Sports field lighting should automatic cutoff at a prescribed time. The parks officially close at 11:00 pm, so court lighting should be on a timer, terminating no later than 10:30pm.
- Landscape Lighting - Low-level lighting should be provided at built structures (restrooms, gazebos, picnic shelters). Because these fixtures will provide low levels of light over a limited area, these can stay on from dusk until dawn without risk of glare/interference to adjacent property owners. This provides a means by which the police can monitor activity at these facilities at night from a distance.

Area to be Illuminated	Footcandles	Fixture Heights
Tennis	20	20'-30'
Basketball	10	20'-30'
Baseball	15 (infield), 10 (outfield)	60'-80'
Softball	10 (infield), 7 (outfield)	60'-80'
Ice skating (pond)	1	20'-50'
Parking Lot	1	20'-50'
Park paths	0.5	10'-15'
Ice Hockey	10	20'-30'
Playgrounds	5	20-30'
Landscape Lighting	0.5	>6'

Playground Safety Surfacing

There are several options commercially available to provide a safe and accessible playground surface. Five options are presented here. They vary in initial cost and maintenance costs. Within the safety zone of the playground equipment, impact attenuation should be the most significant factor to consider. Outside the safety zone, the surface needs to provide a firm and stable surface. A firm surface is one which permits someone in a wheelchair to move in a straight path without requiring undue amount of effort. A stable surface is one which permits someone in a wheelchair to make a 90° turn without requiring undue amount of effort.

Engineered wood fiber (top), Shredded rubber mulch (bottom)

Engineered Wood Fiber (EWF):

Engineered wood fiber playground safety surfacing is manufactured from natural wood fibers from fresh wood that could not be made into lumber. Typical installation of this material is to a 12" depth with a geotextile fabric layer, a 3" thick ¾" washed rock subbase, and another geotextile fabric layer separating it from the subsoil. In theory, given proper underdrainage, this material can to last up to eight (8) years, but it is less in practice. The material biodegrades over time, and that rate increases if the material is kept moist (EWF is water absorbent). It requires a great deal maintenance to keep the material from compacting and from migrating away from the use zone. Play equipment with a significant horizontal movement (swings, bottoms of slides) have the greatest displacement of EWF out of the use zone, and therefore requires some maintenance effort to restore the material and maintain a level of safety. When wet, EWF becomes significantly less firm and stable, and less effective as an accessible surface. During the winter, EWF will freeze solid, providing little or no impact attenuation. The cost for material and installation of this surface is $4 per square foot (assuming a 12" depth).

Resin Engineered Wood Fiber:

Research performed by the United States Department of Agriculture on means of improving engineered wood fiber surfaces for accessible playgrounds has found that the addition of a latex (Soil-Sement®) or polyurethane (Vitriturf) material improves the firmness and stability of wood fiber surfacing without significantly increasing the impact attenuation. They have found that these additives keep the wood fiber more moist, though, which accelerates the decomposition of the wood fiber. Further research needs to be performed before recommendations are made to employ this technique.

Shredded rubber "mulch:"

Shredded rubber mulch is derived from the processing of recycled tire rubber. It is five times heavier than EWF, so it is less likely to be blown or washed away. It is lower maintenance than EWF since it does not compact and it does not decay readily. It does not absorb water, so its impact attenuation levels are maintained through winter. Like EWF, though, it does get displaced from play components with a significant horizontal movement, which presents a maintenance issue. It does not sustain mold or fungal

growth, nor does it attract bugs or pests. The cost for material and installation of this play surface is $7-$8 per square foot (assuming a 6" depth).

Rubber tiles:

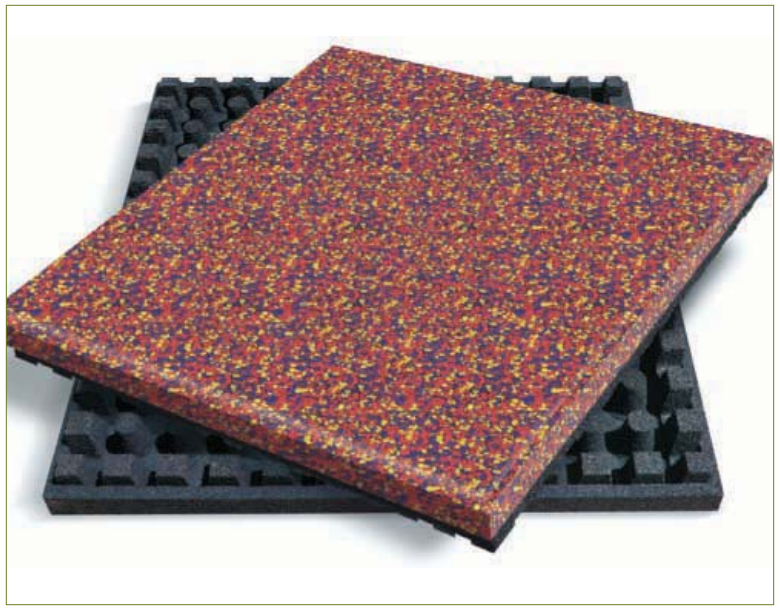
Rubber tiles are manufactured from recycled tires and virgin rubber, bound together and pressure molded to a consistent size and depth. They will not crumble or crack, are fire resistant, are relatively easy to repair, easy to clean, are durable, come in a variety of colors, and are relatively easy to install. They are water permeable, so it is necessary to install underdrainage. They create a firm and stable accessible surface. They are successful when the foundation is stable (such as poured concrete) and the tiles can be glued down. If there is uneven settlement in the base, the edges of the tiles are exposed and become susceptible to vandalism. This material maintains its level of impact attenuation throughout the winter. The cost for material and installation of this play surface is $12-$13 per square foot (assuming a 4" thick tile, excluding underdrainage).

Poured-in-place rubber surface:

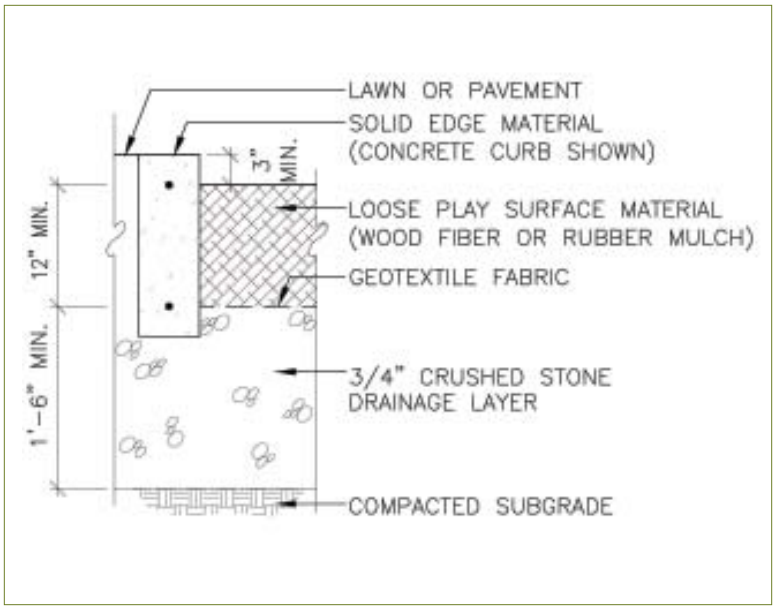
Rubber particles in the poured-in-place are manufactured from recycled and virgin rubber that is mixed with a polyurethane binder and poured-in-place, creating a seamless play surface. The material is fire resistant, relatively easy to repair, easy to clean, very durable, comes in a wide variety of colors, or can be blended to create different colors and effects. It is a water-permeable play surface, so it is necessary to install underdrainage. This material maintains its level of impact attenuation throughout the winter. The cost for material and installation of this play surface is $18-$20 per square foot (assuming a 4" thick layer, excluding underdrainage).

Edge Material:

Whether loose material such as wood fiber and shredded rubber mulch, or poured-in-place rubber surface, a well defined, installing a solid edge is a worthwhile investment that reduces long term maintenance costs. Loose materials will tend to migrate out of



Rubber tiles (above), Resilient Surface (below)



Play edge material (above)

the play area unless the edge material is minimally 3" above finish grade (see detail). Where handicap accessibility is to be provided, the top of the ramp should be at the same height as the edge material and can slope down to finish grade within the play area. Unless a solid edge material is included in a poured-in-place resilient play surface installation, the edges of the resilient play surface will begin to crumble and decay, thus reducing the life expectancy of this material.

Gazebo

The community has expressed a desire for a covered performance space and felt a gazebo would be an appropriate addition to their parks. Associated with this gazebo would be lighting and electric service. The structure should be all steel construction with a power-coat finish, and the style of architecture should complement the parks. For ease of maintenance, it is recommended that the gazebos be from the same manufacturer, although they could be of different sizes in keeping with the scale of the adjacent open space available for seating and the remainder of the park. The intent of this performance space is to provide evening entertainment during the summer months with a circulating program and a fixed schedule for each park. For example, the community would know that there is entertainment at Merrill Park Tuesday evenings during the months of July and August, Wednesday evenings at Garrison Park, etc. This also provides a venue for local performers to reach out and make the public aware of their skills.

Restrooms

The community has expressed a strong desire for accessible restrooms. There are several restroom options to consider, three of which are listed here: conventional, self-cleaning, and composting.

Conventional restrooms connect to existing sewer and electrical lines. There are many manufacturer's of "no-touch" restroom components (urinals, toilets, toilet paper dispensers, sinks, hand dryers) that reduce operating costs and the risk of improper usage. These components can be incorporated into an existing structure or a simple structure can be built to house them using conventional building practices. Initial costs are lower than for the other two options, but over time, the savings are lost due to sewer fees and higher maintenance costs.

Self-cleaning restrooms reduce the high maintenance costs associated with conventional restrooms. All components can be "no-touch" which helps control maintenace costs. In addition, there is a

'wash' cycle which removes up to 99.9% of the contaminating organisms in the restroom. This item is sold as a pre-fabricated single unit, and is expensive. Like the conventional restrooms, this system connects to existing sewer and electrical lines.

There are many manufacturers who offer low-maintenance composting restrooms suitable for high-load (public) use. They come in a range of sophistication. Some have built-in photovoltaic systems for generating electricity, solar hot air collectors to keep the composting equipment warm, and computerized controls that regulate the operation of pumps, fans, lights, and other monitoring devices. The resulting compost can be offered to neighborhood garden societies, local gardeners, and on-site use. The liquid waste can either be sent out to a leaching field or emptied into a sewer system.

The disadvantage of these restrooms is that, in order to make the composting vessel accessible for maintenance, the 'basement' needs to be located partially or fully above ground. Unless situated on sloped terrain, the restroom will be 'perched' higher than adjacent park uses in order to provide a daylight 'basement' where the compost vessel can be easily accessed. The building that houses these amenities can be built using conventional techniques. There is a cost savings on utilities (no sewer or electricity connection required) and maintenance costs are low, generally limited to the cleaning of surfaces and the periodic (but infrequent) emptying of the compost vessel.

In all three alternatives, gray-water from the restrooms can be used to augment the watering of adjaccent ornamental planting around the restooms.

Ballfields

Typically, playing fields are relatively flat. Even where fields are modestly pitched, the flow path to a storm water collection system can be quite long. The heavy use of playing fields results in a very tight surface soil matrix that resists infiltration. As a result, the turf often becomes saturated. Activities on the field during or after a storm may result in damage to the turf.

There are a number of methods and products that can be effective in promoting drainage of sports fields. The most effective methods are those that result in rapid infiltration and disposal of surface water. But no matter how effective the first construction is, proper field maintenance remains a key factor in the long-term durability of the fields (see Lawn Maintenance Manual).

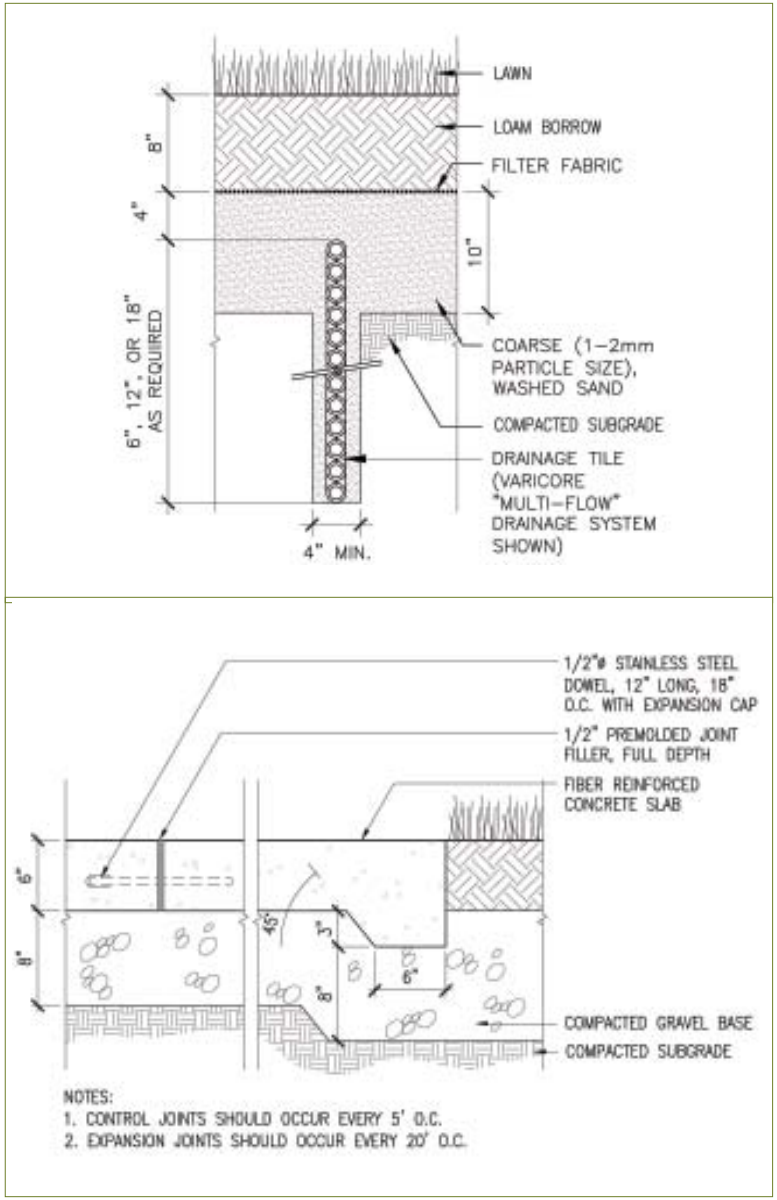
The subsurface drainage system should promote:

- Water movement through the soil profile
- Maintenance of appropriate oxygen and water content for turf stability
- Include sufficient pitch to avoid puddling

Water movement through the turf and subsoil is gained by using relatively free draining materials. Loam and other topsoil should have sufficient sand in the matrix to provide a drainage path from the surface to the underlying base. Topsoil should range 6-8" in thickness, deep enough for grasses to take root, but not so deep as to retain too much moisture.

Below the topsoil, there should be a 6-10" layer of medium to coarse sand that will wick the surface moisture out of the overlying topsoil and provide a matrix though which the infiltrated water can be dispersed. The base material should not contain too much silt, as this can cause "capillarity." Capillarity is a phenomenon in which water can actually be sucked up from subsurface sources to the surface.

Under Drainage (top), Concrete pavement for skateboard park (bottom)



If the subsoils are naturally sandy and groundwater lies well below the surface, infiltrated water may readily drain downward. If not, it is important that the base material be constructed to drain. Current practices include the use of manufactured drainage tiles set into the ground and into which the base material will drain. The drainage tiles are then connected by a piping system to a storm drainage collection system for disposal away from the field. An example of a drainage tile is presented in a sketch on the following page. The space between the tiles would be designed based on the subsurface pitch and factors related to the specific product.

One important factor that cannot be overlooked is the need to maintain the system and the turf after the first installation. The collection system will only be as effective as the topsoil allows free drainage into he subsurface matrix. A regular maintenance program that includes periodic aeration of the fields offers the best means to maintain a healthy turf and to promote rapid drainage of surface water into the subsurface drainage system. Aeration will ensure that the topsoil includes a proper balance of oxygen and water for root growth and a stable turf.

Ice Skating Surfacing

Outdoor ice hockey rinks that are created by flooding and air freezing can be placed on almost any surface after the ground freezes. Many municipalities flood low, field areas while others use tennis and basketball courts. A 6-10 mil polyethylene rink liner is utilized to provide a leak-proof base for the skating areas.

Where the facility may be used as a skateboard park during the non-winter months, a smooth durable surface is a critical need. Concrete presents the most desirable material for this use. Advantages of concrete versus other materials include toughness (impact and wear resistance), flexibility (ability to control the cement/aggregate/water ratios to attain the desired strength and surface characteristics), and resistance to potholes/frost heaves.

The long-term durability of a concrete slab-on-grade surface will largely depend on how free draining the underlying soils are. Frost heaves and potholes are problems created by moisture in relatively fine-grained soils. Moisture can accumulate not only as a result of precipitation, but also by capillary action that sucks moisture up from the groundwater table. The best prevention is to remove frost susceptible soils from the area below the proposed rink surface. Where that method is cost prohibitive, benefits can be gained by installing a subdrain system and/or a free draining base below the concrete slab. The subdrains would convey the water away to a surface drainage system while the free draining base (4-6" of coarse sand or fine stone) would serve as a buffer between the poor soils and the slab.

Buildings on Unstable Soil

Buildings and parking facilities are often constructed in places where the subsurface materials have poor mechanical properties and are subject to significant settlement under imposed loads. Solutions vary depending on the structure type, size and load as well as by the depth and thickness of the poor strata. Where the unsuitable soils are relatively close to the surface and are not too thick (7-8 feet), it is usually economical to remove the poor soils and backfill with a compacted structural borrow up to the frost or base course depth. Buildings would then be founded on shallow, spread footings.Parking lots would be built directly above the new subbase material.

Where over-excavation is not economical, buildings can be constructed on deep foundations (drilled piers or driven piles). These types of footings transfer the building load through the unsuitable soils and into the more competent strata below. Again, the choice of deep foundation type comes down to the depth and character of the subsurface strata. Generally, if the soils below the unsuitable soils are dense, gravelly deposits, a drilled foundation is typically used. If the subsoils are sandy, driven piles are often more economical.

Sometimes, rather than excavating or constructing deep foundations, owners and engineers take measures to stabilize the unsuitable materials. This action can be taken to support either buildings or parking areas and fields. Preloading is a common method of preconstruction stabilization of poor subsoils. Preloading is applicable to compressible soils (typically peaty and clayey soils) having a high water content. Soils are preloaded by constructing embankments with sand or stone over the surface, and impose a load that is greater than the anticipated building load. The embankment serves to wring moisture out of the soil matrix causing the poor soil to consolidate. On the surface, the consolidation is observed as settlement. Depending on the subsurface soil characteristics, preloading can be a time consuming endeavor. However, use of vertical wick drains and a drainage blankets can reduce the time dependency. These features offer a means for the water being squeezed out of the soil matrix to drain faster, leading to faster consolidation of the soil mass. After consolidation of the unsuitable layer, the embankments are removed. Buildings are then usually constructed on a shallow footing, and parking lots are built to their final grades.

Other, more complex methods of soil stabilization are sometimes employed for critical structures. These methods include soil mixing and grout injection. However these methods are very expensive and not typically used for small municipal facilities.

Before a soil stabilization method can be established, a subsurface investigation consisting of borings and soil

Number of Elevated Play Components Provided	Minimum Number of Ground Level Play Components Required to be on Accessible Route	Minimum Number of Different Types of Ground Level Play Components Required to be on Accessible Route
1	Not applicable	Not applicable
2 to 4	1	1
5 to 7	2	2
8 to 10	3	3
11 to 13	4	3
14 to 16	5	3
17 to 19	6	3
20 to 22	7	4
23 to 25	8	4
More than 25	8 plus 1 for each additional 3 over 25, or fraction thereof	5

ADA Playground guidelines (above), Playground at White Park (below)

testing is required to establish the stratification and mechanical properties. With this information, the engineer can make a determination of what actions should be taken to support the proposed facilities.

Barrier-free amenities and American Disabilities Act (ADA) compliance

In all new construction or alterations to existing public spaces, it is required that they meet accessibility guidelines set forth in the ADA Standards for Accessible Design, Code of Federal Regulations (CFR) 28, July 1994 (or later).

Playgrounds

According to the ADA guidelines, the surfacing to and from the playground and the surfacing under and around play structures must be soft enough to limit injuries from falls within the use zone of the playground equipment, yet be firm and stable enough for a wheelchair to maneuver. It is important to note that the guidelines state that only the access routes to and from the playground and on and off the equipment need to be accessible.Thus, you can have entrances and exits surfacing areas with poured-in-placed materials and other areas with sand or pea gravel. In addition, where play components are altered and the ground surface is not, the ground surface

does not have to comply with the ASTM F 1951-99 standard for accessible surfaces unless the cost of providing an accessible surface is less than twenty (20) percent of the cost of the alterations to the play components.

The following chart describes the relationship that must exist between type and number of play components that are elevated (non-accessible) and those that are accessible at ground level. If at least fifty (50) percent of the elevated play components are connected by a ramp, and if at least three (3) of the elevated play components connected by the ramp are different types of play components, the guidelines in the chart do not apply.

Accessible Route

At least one accessible route within the boundary of the site shall be provided from public transportation stops, accessible parking, and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve. The accessible route shall, to the maximum extent feasible, coincide with the route for the general public. The minimum clear width of an accessible route shall be thirty-six (36) inches except at doors. If an accessible route has less than sixty (60) inches clear width, then passing spaces at least sixty (60) inches by sixty (60) inches shall be located at reasonable intervals not to exceed two hundred (200) feet. A T-intersection of walks is an acceptable passing place.

An accessible route with a running slope greater than 1:20 is a ramp and shall comply with the appropriate guidelines for handicap-accessible ramps. Nowhere shall the cross slope of an accessible route exceed 1:50.

Parking

Accessible parking spaces shall be at least ninety-six (96) inches wide. Parking access aisles shall be part of an accessible route to the building or facility entrance. Two accessible parking spaces may share a common access aisle. Parked vehicle overhangs shall not reduce the clear width of an accessible route. Parking spaces and access aisles shall be level with surface slopes not exceeding 1:50 (2%) in all directions.

Number of Parking Spaces	Minimum Number of Handicap-accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
500-1,000	2% of total

ADA Parking Lot guidelines (above)

Accessible parking spaces shall be designated as reserved by a sign showing the symbol of accessibility. These spaces shall have an additional sign "Van-Accessible" mounted below the symbol of accessibility. Such signs shall be located so they cannot be obscured by a vehicle parked in the space. It is an unwritten rule that the maximum distance one should travel from the parking space to a facility entrance is between 100-200 feet. Level, indirect routes or those with running slopes lower than 1:20 can sometimes provide more convenience than direct routes with maximum allowable slopes or with ramps.

Appendix A

Site Amenity Sources

Benches

Can be personalized with custom lettering on side support panels

A. Dumor Model 142 (Wood Bench with Backrest),
Ipe slats, Black, Green, or Bronze.

B. Dumor Model 57 (Wood Bench with Backrest),
Ipe slats, Black, Green, or Bronze.

C. Landscape Forms (Model Plainwell), Ipe Slats, powdercoat finish in Grotto, Ivy, Stormcloud, Blue Spruce.

D. Landscape Forms (Model Balustrade), Ipe Slats, Powdercoat finish in Grotto Black, Ivy, Stormcloud, Blue Spruce.

E. Victor Stanley (Model Classic Series C-10), Ipe Slats, Powdercoat finish in Bronze, Black, or Tavern Square Green.

F. Victor Stanley (Model Classic Series C-140), Ipe Slats, Powdercoat finish in Bronze, Black, or Tavern Square Green.

G. Litchfield Industries (Model Grand Central 3120), Ipe Slats, Powdercoat finish in Black.

A.

B.

C.

D.

E.

F.

G.

Trash Receptacles

A. Dumor Model 102, 32-gallon, Powdercoat finish in Black, Green, or Bronze.

B. Dumor Model 124, 32-gallon, Ipe Slats, Powdercoat finish in Black, Green, or Bronze.

C,D. Landscape Forms (Model Scarborough), 30-gallon, powdercoat finish in Grotto Black, Ivy, Stormcloud, Blue Spruce.

E,F. Victor Stanley (Model Concourse Series FC-12), 32-gallon, powdercoat finish in Bronze, Black, or Tavern Square Green. (Can be personalized with S-42 Band Decal).

G. Litchfield Industries (Survivor Series Model 4630), 32-gallon, funnel top, Survivor Series Color Black.

H. Landscape Forms (Model Gretchen), 30-gallon, powdercoat finish in Grotto Black (adjacent to picnic tables).


A.


B.


C.


D.


E.


F.


G.

A. - Shelter

B. - Shelter/Outdoors

C. - Shelter

A. - Gazebo

A. - Picnic Shelter

Gazebo

A. Litchfield Industries (Model 8524D) - 24' Pittsburgh Octagonal Duo-top, cupola, steel rails, with powdercoat finish in Hunter Green metal frame & supports and Hunter Green Litchtop roof. (Garrison & Merrill).

Picnic Shelter

A. Litchfield Industries (Model 8200 - Pittsburgh Hip), 24' x 50' (Garrison & Merrill) or 30' x 64' (Rollins & White) with powdercoat finish in Hunter Green metal frame and supports and Hunter Green Litchtop Roof.

Picnic Tables

(Within picnic shelter)

A. Landscape Forms (Model Gretchen), Ipe, powdercoat finish in Grotto Black, surface-mount.

B. Litchfield Industries (Model 4400 - Mountaineer Table), yellow pine, unstained.

C. Dumor Model Table 77, Yellow Pine, Powdercoat in black, green, or bronze, surface-mount.

(Outdoors)

A. Landscape Forms (Model Gretchen), Ipe, powdercoat finish in Grotto Black, surface-mount

B. Litchfield Industries (Model 4400 - Mountaineer Table), redwood, permanent in-ground mount.

C. Dumor Model Table 77, Yellow Pine, Powdercoat in black, green, or bronze.

A. - Outdoors

C. - Outdoors

Playground Equipment

Gametime
Marturano Recreation Company
P.O. Box 449
Brick Town, NJ 08723
Phone: (732) 458-1111
Toll Free: (800) 922-0070
Fax: (732) 458-1165

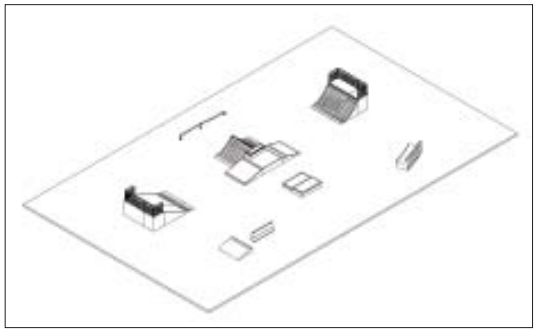
Landscape Structures
O'Brien & Sons, Inc.
PO Box 650
Medfield, MA 02052
Phone: (508) 359-4200
Toll Free: (800) 835-0056
Fax: (508) 359-2817

KOMPAN, Inc. - North American Headquarters
7717 New Market Street
Olympia, WA 98501
Phone: (360) 943-6374
Toll Free. (800) 426-9788
Fax. (360) 943-3015

Skate Park Equipment (above) & Design (below)

Skate Park Design

Spohn Ranch, Inc.
15131 Clark Avenue, Unit B
City of Industry, CA 91745
Phone: (626) 330-5803
Fax: (626) 330-5503
Online: www.spohnranch.com



Appendix B

Historic Background on White

Park & Charles Eliot

White Park is significant as the work of the pioneering American landscape architect Charles Eliot (1859-1897) during the six-year period (1887-1892) that he practiced independently in Boston before entering the Olmsted firm as a partner in 1893, forming the office of Olmsted, Olmsted and Eliot. Eliot graduated from Harvard College in 1882, after which he studied at the Bussey Institute in Jamaica Plain (Boston), then Harvard's School of Agriculture. A year later, he joined the Olmsted firm in Brookline, Massachusetts as their first apprentice.[1]

In the course of his brief career, Eliot gained eminence primarily for his role in land conservation as founder of the Massachusetts Trustees of Public Reservations (now the Trustees of Reservations) and as the first landscape architect for the Metropolitan (Boston) Park Commission. While Eliot was a distinguished practitioner, his personal design projects from this six-year period are relatively few and not well known. White Park and Longfellow Memorial Park in Cambridge (1887) seem to be his only public designs from this period extant today, along with a few residential projects.[2]

The 25-acre plot of land for White Park was given to the city of Concord by Mrs. Armenia S. White, a local philanthropist, in 1884. Mrs. White also donated an endowment of $1,700 for the initial expenses of developing the site into a park. In 1887-1888, the city appropriated $2000 to complete the park's development. Most of this money must have been spent on labor and materials, since Eliot's commission was only $300.[3]

Eliot first viewed the site in the spring of 1888, and his initial report to the Concord Park Commission is dated May 10 of that year. He noted that the land was very attractive and repeatedly admonished the commission that the park should contain no carriage drives and no decorative gardening, both of which would be expensive and inappropriate.[4]

He explained that: "The park for Concord should be a place of quiet resort for people who cannot take the time, or have not the strength, to go often to find refreshment in the open country. The tired workers of the city should be able to reach it easily. Women and children should find it near their homes, a pleasant place in which to spent the afternoon or the day in rest or play."[5] This was exactly the same rationale that Olmsted consistently used in making recommendations for public parks for cities and that Eliot later used in justifying the North End Park and Copp's Hill Terraces (1897), his personal contribution to the Boston municipal park system.[6]

Eliot explained that the White Park site would require paths, drainage, a pond for skating, the cutting of some of the woods to allow for a "greensward," and the planting of some new trees and shrubs. He recommended a survey, which was made by J. McClintock, C. E., in May 1888. Eliot also praised the steep ridge with its views of the Merrimac valley, as well as the natural wood and

Charles Eliot Plan

wild flowers, which included mayflowers and golden rod.[7]

The site was then bounded by White Street, Washington Street, Centre Street, High Street, and a parcel of apparently unoccupied land. In Eliot's plan, much of the site was left wooded, with a greensward on the north and another on the right south. Other than the pond for skating, there were no provisions for active recreation. There was a second tiny pond whose function must have been purely decorative.

In March, Eliot recommended that a wooden fence be built to surround the park, also recommending that a notice with the name of the donor and any applicable ordinances be posted on the fence.[8] By August of that year, work on the park was well advanced, and Eliot wrote an article about it, which was published in the influential periodical "Garden and Forest."[9] The article was an expanded version of his May 10, 1888 letter to the park commissioners. When Eliot first viewed the site, in addition to the grove of mature trees and the delicate wild flowers, he found native alders and birches. Overhanging the tiny second pond were tall white pines. Eliot added a thicket of mountain laurel to frame a view of the Merrimac.[10]

Eliot's article concluded with a drawing of "a very low stone bridge." The present stone bridge, which closely follows Eliot's sketch, was built from designs by local architect George B. Howe in 1896. Information is lacking about whether the wooden fence recommended by Eliot was ever constructed, but a steel fence around the property was built after 1905, as was the main park gate. Near the gate was a stone and wood shelter for passengers on the Concord Street Railway.[11]

In the archives of the Society for the Preservation of New England Antiquities (recently renamed "Historic New England") is a series of thirteen postcards of White Park. Although undated, they show the bridge, the gate, and the shelter and were probably taken ca. 1910-1920. Numerous mature trees can be seen, which may have been original to the site or may have been planted under the supervision of Charles Eliot, if, as was often the case at the time, he recommended large trees. Among them are birches and willows. Near the edge of the large pond are several small, newly planted trees. A few benches in a style typical of the early 20th century are also visible.

More recent change to White Park are extensive facilities for active recreation, such as an adult baseball diamond, a Little League diamond, and a football field. There is also a Park Department office built in 1936-1937 by the Works Progress Administration, as well as a concrete block storage shed. A swimming pool now occupies the site of the smaller of the two ponds.[12]

Remarkably, White Park has not lost any acreage over the years, and a small parcel has even been added. The park is a happy survivor of the life work of a distinguished 19th-century landscape architect.

Cynthia Zaitzevsky
December 2004

1. Keith N. Morgan, "Charles Eliot," in Charles A. Birnbaum and Robin Karson, eds., Pioneers of American Landscape Design (New York: McGraw-Hill, 2000), 107.

2. Ibid., 477.

3. Charles W. Eliot, ed., Charles Eliot, Landscape Architect (Boston and New York: Houghton, Mifflin and Company, 1902), 229.

4. Ibid., 227.

5. Ibid., 228.

6. For Olmsted's views on what he called "the restorative values of rural scenery," see Cynthia Zaitzevsky, Frederick Law Olmsted and the Boston Park System (Cambridge, Massachusetts: Harvard University Press, 1982), 73-77. For his plan for the North End Park, see Ibid., 103-105.

7. Eliot, Charles Eliot, 228-229.

8. Ibid., 229-230.

9. Ibid., 230-233. This article was reprinted with slight changes in the Concord Evening Monitor, August 20, 1889 and The Granite Monthly, 13 (1890), 228-229.

10. Ibid., 230-233.

11. "White Park," National Register of Historic Places, Inventory-Nomination Form, April 23, 1982 (listed November 9, 1982).

12. Ibid.

Analysis of the impact of the Consensus Master Plan to the Historic Charles Eliot Design.

Since its creation, the original design for White Park has been repeatedly compromised as it addressed the then current public open spaces needs, overriding any requirement to preserve White Park as a historic landscape. Despite these significant modifications, in 1982, White Park was successfully adopted onto the National Register of Historic Places. White Park has changed little since then that would negatively impact its qualifications to remain on the National Register.

When developing the Consensus Master Plan, design alternatives presented included restoring White Park to the original Charles Eliot design. This would have required the removal of all active sports facilities (baseball fields/soccer fields, the basketball courts), and the parking lots. This design approach was not adopted. In addition, there are other significant historic components overlaid upon this park that the community requested be preserved. This park was the site of the Sunset Baseball League, established in 1909, and remains the oldest after-dinner amateur baseball league in the United States.

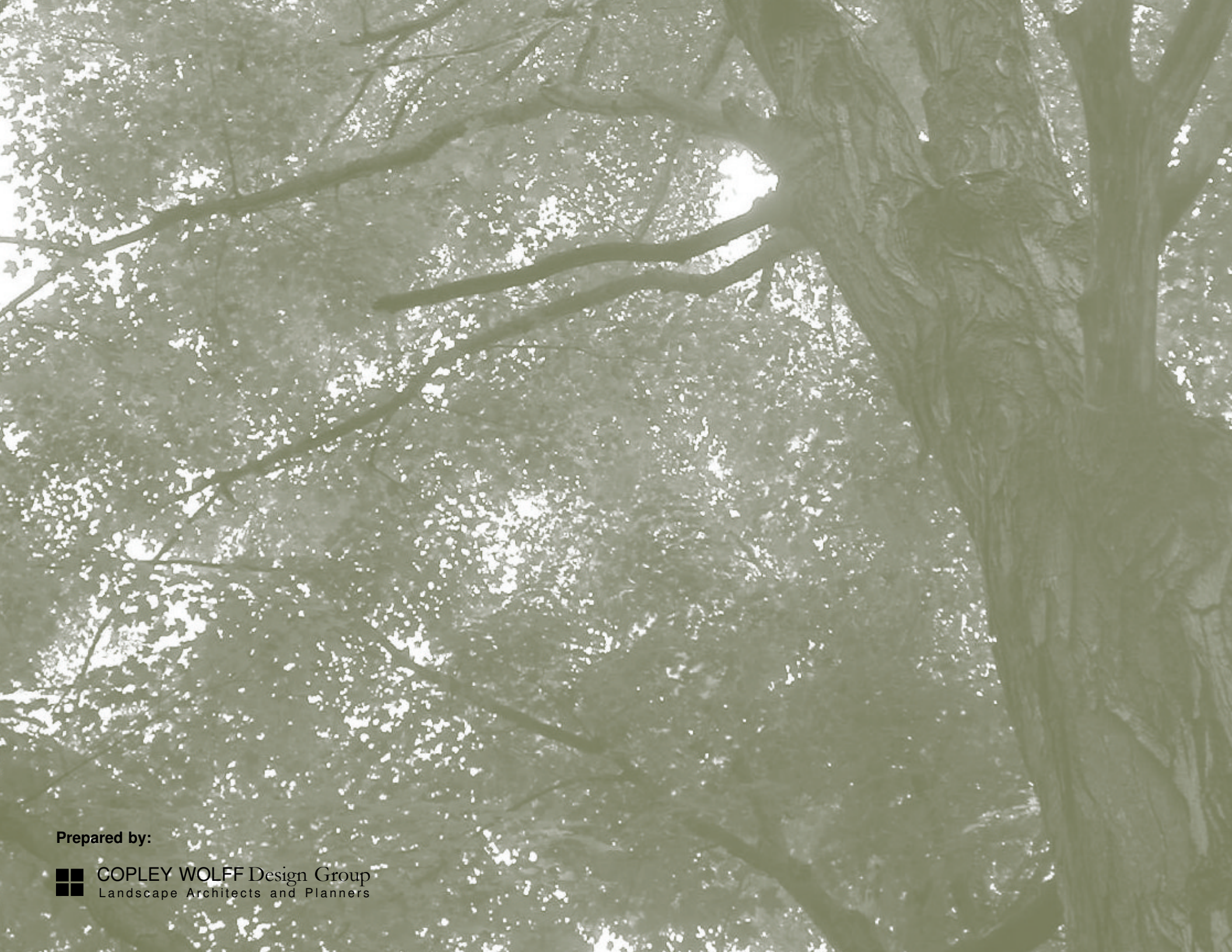
Still, the Master Plan evolved through informed design decisions with sensitivity towards the Charles Eliot design being considered. As a result, the Consensus Master Plan either leaves the improvements that compromised the original design as is, or proposes modifications that can be made to restore certain aspects of the original design.

A. In the original Charles Eliot Design, the greensward in the south of the site was in an oval with a perimeter walk. The existing condition has a path that clips the oval. This path serves as a shortcut between the entrance to the park at the Centre and Washington Street intersection and the path that leads to the swimming pool. This is also the only path that goes directly from this end of the park to the amenities at the northern end. The oval was further distorted when the path was kept exclusively to the south edge of the pond. In the Consensus Master Plan, the oval is restored by creating a path that runs between the pool and pond, serving as the primary north-south spine of pedestrian circulation similar to the path that existed between the upper and lower ponds in the original design, thus eliminating the need for the offending intermediate path.

B. The Charles Eliot Design shows a gazebo-like structure near where the existing Recreation Building is sited. In one of the design options presented to the community, a gazebo was proposed in the same location. It was determined that, were the gazebo to be located there, uphill and a significant distance away from the proposed parking, that amenity would be inaccessible to mobility-impaired park visitors. Instead, the gazebo was moved towards the middle of the park; the adjacent greensward, serving as a seating area for the performance space, and an area for unstructured play, is similar in location and shape as a greensward in the original design.

C. By merging the Recreation Department building, the Skatehouse, and the much requested year-round restroom into one structure, and locating it close to the proposed parking, the blemish to the original design is consolidated.

In summary, implementing the Consensus Master Plan should preserve the eligibility of White Park to remain on the National Register. It is recommended that any proposed changes be presented to the appropriate agency prior to construction to ensure that White Park continues to be eligible.



Prepared by:

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